Analysis of Waste Analysis Plans (WAPs) From 60 Commercial Hazardous Waste Treatment, Storage and/or Disposal Facilities Located in the U.S.

Purpose

To determine how the regulated community (i.e., commercial treatment, storage and/or disposal facilities) comply with the 40 CFR Part 268 regulatory requirement regarding "frequency of testing" for treated hazardous waste to ensure compliance with the Land Disposal Restrictions (LDR) treatment standards.

Background

Over the last several years, EPA inspections and site visits to treatment, storage and disposal facilities (TSDFs), as well as reviews of hazardous waste permits, have uncovered significant issues with how the LDR requirements are implemented. Both in practice and as outlined in the facility's permit/Waste Analysis Plan (WAP) there appear to be a significant number of practices that may be non-compliant with the LDR requirements but nonetheless are practiced at TSDFs. It some cases these practices are included in the facility's permit/WAP and provide "permit as a shield" protections against enforcement actions. These practices can: (1) fail to accurately measure compliance with the LDR concentration-based treatment standards due to inadequate sampling and analysis; (2) fail to achieve the required level of performance standard for a prescribed LDR method of treatment by using sub-standard treatment practices (e.g., cardboard box lined with plastic); and (3) allow for treatment practices prohibited under the LDR program (e.g., use of "put piles" and treatment of debris in the landfill). While current investigations are far from comprehensive, compelling anecdotal evidence suggests that there may be a national issue with TSDF permit/WAPs and how TSDFs are complying with the LDR requirements. This raises potentially significant concerns of whether these practices are protective of human health and the environment, as well as raising issues among TSDFs regarding a "level playing field." For example, 40 CFR Part 268 requires that a permit writer include in a facility's permit the "frequency of testing" for a treatment residual prior to land disposal. Preliminary analysis indicates that some wastes are tested with a single grab sample annually while others may test every treated batch of waste with multiple grab samples being used to demonstrate LDR compliance. A number of states have expressed interest in model permit language to address these situations. One state commenter asked about whether treatment in landfills is allowed and expressed to be in favor of allowing it.

A team of staff from EPA HQ, the Regions and several states have come together to further investigate this issue. The PIT-WAP-LDR team held their first meeting on Tuesday, February 20, 2018. The team currently consists of seven members from EPA HQ (ORCR, OGC, OECA, and NEIC); EPA Regions 3, 5, 9 and 10 and the states of CA, IL, ID, and WS.

At the first meeting, everyone introduced themselves, their reasons for being on the team and their expectations for the project. As a first step, the team collected WAPs from 50+ commercial TSDFs that either treat hazardous waste using stabilization, sludge treatment or encapsulation or treat and dispose of hazardous waste in a Subtitle C landfill. The 50+ facilities were identified in the EPA document, "National Capacity Assessment Report: Capacity Planning Pursuant to CERCLA Section 104". March 25, 2015. The WAPs from these facilities have provided the basis/foundation for our analysis of the LDR component of the WAP. The WAPs were collected as either a PDF, link or Word file. While the collection phase has not yet been completed (22 WAPs are still outstanding) we have begun to extract from the WAPs the relevant LDR sections of the WAP for the team to review and begin our analysis. The first task is to generate a fact-based analysis of what type of information is found in the WAP regarding LDR compliance. There may be several iterations of this analysis depending on our preliminary results. Initially we will focus on general information that may assist in determining the frequency of sampling and analysis. We may then move into the treatment of debris as well as retreatment strategies if the waste fails for LDR after initial treatment.

Regulatory Requirements (abbreviated)

40 CFR 264.13 General Waste Analysis

(a)(1) Before an owner or operator treats, stores, or disposes of any hazardous wastes, ….he must obtain a detailed chemical and physical analysis of a representative sample of the wastes, at a minimum, the analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with this part and part 268 of this chapter.

(2) The analysis may include data developed under part 261 of this chapter, and existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes.

(3) The analysis must be repeated as necessary to ensure that it is accurate and up to date. At a minimum, the analysis must be repeated:

(i) When the o/o is notified or has reason to believe, that the process or operation generating the hazardous wastes has and;

(ii) For off-site facilities, when the results of the inspection required in paragraph (a)(4) of this section indicate that the hazardous waste received at the facility does not match the waste designated on the accompanying manifest or shipping paper.

(4) The o/o of an off-site facility must inspect and if necessary, analyze each hazardous waste movement received at the facility to determine whether it matches the identity of the waste specified on the accompanying manifest or shipping paper.

(b) The o/o must develop and follow a written waste analysis plan which describes the procedures which he will carry out to comply with paragraph (a) of this section. He must keep this plan at the facility: At a minimum, the plan must specify:

(1) The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters (i.e., how analysis for these parameters will provide sufficient information on the waste's properties to comply with paragraph (a) of this section):

(2) The test methods which will be used to test for these parameters;

(3) The sampling method which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using either:

(i) One of the sampling methods described in appendix I of part 261 of this chapter; or

(ii) An equivalent sampling method.

(4) The frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up to date; and

(5) For off-site facilities, the waste analyses that hazardous waste generators have agreed to supply.

(6) Where applicable, the methods that will be used to meet the additional waste analysis requirements for specific waste management methods as specified in ….268.7 of this chapter.

(c) For off-site facilities, the waste analysis plan required in paragraph (b) of this section must also specify the procedures which will be used to inspect and, if necessary, analyze each movement of hazardous waste received at the facility to ensure that is matches the identity of the waste designated on the accompanying manifest or shipping paper. At a minimum, the plan must describe:

(1) The procedures which will be used to determine the identity of each movement of waste managed at the facility; and
(2) The sampling method which will be used to obtain a representative sample of the waste to be identified. If the identification method includes sampling.
(3) The procedures that the o/o of an off-site landfill receiving containerized hazardous waste will use to determine whether a hazardous waste generator or treater has added a biodegradable sorbent to the waste in the container.

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40 CFR 268.7 Testing, tracking, and recordkeeping requirements for generators, treaters, and disposal facilities.

268.7(b) Treatment facilities must test their wastes according to the frequency specified in their waste analysis plans as required by 40 CFR 264.13. Such testing must be performed as provided in paragraphs (b)(1), (b)(2), and (b)(3) of this section.

(1) For wastes or contaminated soil with treatment standards expressed in the waste extract (TCLP), the o/o of the treatment facility must test an extract of the treatment residues, using test method 1311 (TCLP) to assure that the treatment residues extract meet the applicable treatment standards.

(2) For wastes or contaminated soil with treatment standards expressed as concentrations in the waste, the o/o of the treatment facility must test the treatment residues (not an extract of such residues) to assure that they meet the applicable treatment standards.

(3) A one-time notice must be sent with the initial shipment of waste or contaminated soil to the land disposal facility. A copy of the notice must be placed in the treatment facility's file.

(i) No further notification is necessary until such time that the waste or receiving facility change, in which case a new notice must be sent and a copy placed in the treatment facility's file.

(c) Except where the o/o is disposing of any waste that is a recyclable material used in a manner constituting disposal pursuant to 40 CFR 266.20(b), the o/o of any land disposal facility disposing any waste subject to restrictions under this part must:

(1) Have copies of the notice and certifications specified in paragraph (a) or (b) of this section.
(2) Test the waste, or an extract of the waste or treatment residue developed using test method 1311 (the TCLP descry bed in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." EPA Publication SW-846 as incorporated by reference in 40 CFR 260.11 of this chapter) to assure that the wastes or treatment residues are in compliance with the applicable treatment standards set forth in subpart D of this part, such testing must be performed according to the frequency specified in the facility's waste analysis plan as required by 40 CFR 264.13 or 40 CFR 265.13 of this chapter.

Methodology – Initial Analysis

38 WAPs from approximately 60 known commercial TSDFs (22 WAPs have not yet been located) that either treat metal-bearing wastes (via some type of stabilization) and/or dispose of these wastes were reviewed for the following information: (1) identification of stabilization treatment reagents used; (2) Sampling methods used for collecting treated waste samples; and (3) the frequency of sampling and testing. Now that a significant amount of information has been collected from these 38 WAPs, it is our goal to analyze this information to give a fact-based assessment on how commercial facilities test for LDR compliance and if the information contained in the WAP is sufficient to justify the frequency utilized by the facility. Other analyses will address retreatment practices and potential impermissible dilution issues as well as treatment of debris for LDR compliance. This data/information will then be developed into a briefing document for presentation to ORCR management. It is anticipated that this information will be analyzed by late August and presented to the PIT team. We will also attempt to collect the remaining 24 WAPs and add that information to our database.

Data

Sampling Method and Frequency of Analysis for Stabilized Hazardous Wastes as Reported in Waste Analysis Plans (WAPs) for Commercial Treatment, Storage and/or Disposal Facilities[1]

No	Facility	Treatment and Storage			Sampling				Frequency of Testing	
		Reagents	Mixing Method	Storage Post Treatment	Single grab	Grab sampling	Multiple Grabs	Other	Every batch or load tested	Other Type of Testing Frequency (Tiered, Annual, Quarterly)
1	Clean Harbors of CT	X	X	X					X	
2	Clean Harbors of Braintree									
3	Cyclechem, Inc									
4	Clean Earth of New Jersey									
5	Chemical Waste Management Services, Model City	X		X		X				Periodic As needed
6	Clean Harbors of Baltimore	X							X	
7	Max Environmental Technologies, Inc Yukon Facility	X	X	X				Representative sample taken from 4 locations	X	
8	Envirite of PA, Inc.		X					Representative sample or a repetitive sample (composite sample),	X	
9	Cyclechem							Representative sample for metal microencapsulation treatment	X	
10	Republic Environmental Systems, LLC									
11	Chemical Waste							Grab sampling to collect	X[2]	First batch tested, annually thereafter

[1] Waste Analysis Plans (WAPs) have not been located for the 22 "shaded" facilities in the table.
[2] For consolidate wastes and wastes where reagents are not within 95% of selected mix ratio every batch or load is tested.

	Management,Emelle, AL							representative sample		
12	EWS Alabama									
13	Perma-Fix of Florida									
14	AES Environmental, LLC									
15	Ecoflo, inc									
16	Tradebe Treatment and Recycling of TN									
17	Diversified Scientific Services, INC									
18	East Tennessee Material and Energy Corporation									
19	Envirite of Illinois, Inc		X					Repetitive sampling or representative sampling (composite sample)	X	
20	Peoria Disposal Company			X			X[3]		X	
21	Heritage Environmental Services, LLC									
22	Heritage Environmental Services									
23	Michigan Disposal Waste Treatment Plant/Wayne Disposal	X			X[4]				X	
24	Wayne Disposal/Michigan Disposal Waste Treatment Plant	X	X[5]	X	X[6]				X	
25	US Ecology Detroit North									
26	Drug and Laboratory Disposal, Inc								X	
27	US Ecology South									
28	Dynergy/Dynecol	X								Periodic basis
29	Siemens Industry									
30	Envirosafe Services of Ohio	X	X[7]	X	X					Periodic
31	Environmental Enterprises, In		X						X	
32	Envirite of Ohio, Inc.							Repetitive sampling (composite sample)	X	
33	Veolia ES Technical Solutions, LLC	X		X			X	Representative and composite sampling		As needed
33a	Veolia ES Technical Solutions, LLC Sampling was revised in	X		X			X [8]		X[9]	

[3] Minimum of two grab samples
[4] Random grab
[5] Tanks, pugmill
[6] Random grab
[7] Earthmoving equipment, excavator, front end loaders.
[8] Three grab samples taken ALL must meet LDRs
[9] For wastes approved by the WDNR, a reduced sampling and analysis frequency may be utilized. For these wastes, only the first and last boxes of treated wastes from the treatment run will be sampled and analyzed in order to ensure that the process continues to be effective in meeting the treatment standards.

	12/19/2016 WAP but not finalized, the new language is reflected here.it									
34	Badger Disposal of WI, Inc. (No stabilization)									
35	Chemical Waste Management, Lake Charles									
36	Clean Harbors Baton Rouge									
37	US Ecology Tulsa									
38	Clean Harbors Lone Mountain	X		X[10]						The treatment procedure is verified periodically, typically at least annually.
39	Texas Molecular Deer Park	X								
40	Clean Harbors Deer Park				X				X	
	US Ecology Texas									First batch and at least once per year thereafter[11]
41	Waste Control Specialists			X						Periodic basis. First two batches and at least once annually. May be increased if waste shows variable characteristics
42	The Dow Chemical Company, Texas Operations							Representative grab sampling		Ten grabs, annually thereafter
43	Veolia ES Technical Solutions Jefferson City, TX				X					Initial load, thereafter minimum frequency of once per quarter
44	Veolia ES Technical Solutions, LLC Henderson, Colorado (No information in WAP)									
45	Clean Harbors Deer Trail, CO				X			Random samples		10% of campaign. If three successive campaigns meet LDRs, then one in 20 campaigns is tested.
46	Energy Solutions, LLC Clive, Utah			X Put piles	X					One sample from first three treatment runs tested. One sample from 10% of treatment runs until 15 treatment runs have been tested. Then, one sample from 5% of treatment runs. Treatment run is defined as all residues of one waste stream that are treated using the same treatment unit during one calendar day.
47	Clean Harbors Grassy Mountain, Utah			X Put pile	X					Tier 1 – Test batches 1-10 Tier 2 – Test batch 10, batches 11-14 no testing. Test batch 14; batches 16-19 no testing

[10] Treated batches of wastes are assumed to meet the applicable treatment standard and will be located in the landfill cells. If post treatment analyses determines that a treated batch does not meet the standard, the batch will be retrieved for retreatment...Retrieved materials may be staged prior to retreatment for period not to exceed 72 hours on the truck parking pad.

[11] Infrequent shipments test every batch.

										Tier 3 – Test batch 20, batches 21-29 no testing. Test batch 30; batches 31-39 no testing. Test batch 40, batches 41-49 no testing.
48	Clean Harbors San Jose, LLC California (no information provided)									
49	Clean Harbors Westmorland, LLC California			X	X[12]					
50	Chemical Waste Management, Kettleman Hills, CA	X			X					Test first three batches, if pass proceed to annual testing[13]
52	Safety-Kleen systems, Inc California									
53	Clean Harbors Buttonwillow, California	X	X[14]	X	X[15]					For similar wastes with similar treatment a minimum of 10% of treated loads will be sampled.
54										
55	US Ecology Vernon (No detailed information provided)									
56	DeMenno-Kerdoon Facility, California (No trt to LDRs)									
57	21st Century Environmental Management of NV (No information, LDR treatment done off-site)									
58	US Ecology, Nevada	X		X (in storage or disposal units)		X				Annual testing, However, for wastes exhibiting significant variability in characteristics, sampling frequency may be increased to every batch.
59	US Ecology Idaho (Note: WAP references definition of stabilization in 268.42 to reduce the leachability of the metal or organic	X	X[16]			X		Composite samples		First two batches, and at least once a year thereafter Post treatment analyses are performed as necessary
60	Chemical Waste Management of the Northwest, Oregon							Grab sample or grab samples		First three loads for each profile, quarterly thereafter
61	Burlington Environmental, LLC Washington									
62	PermaFix Northwest Washington									

[12] Random grab
[13] Every batch or load is tested if waste streams are combined for stabilization
[14] Pugmill, auger shredder, conveyors
[15] Random grab
[16] Excavator

	Number of Facilities	16/38	9/38	15/38	11/38	3/38	3/38	11/38	15/38	18/38

Analysis of Waste Analysis Plans (WAPs) from Commercial Hazardous Waste Treatment and Disposal Facilities
Possible Categories in WAPs

Treatment

Stabilization of Metals
Stabilization of Organics
Dry mixing of waste and reagents
Reagents used for stabilization
Equipment used for mixing waste and reagents (Backhoe, pugmill, other)
Time Mixed
Dilution Monitoring
Cure time
Retreatment information
Treatment Unsuccessful, sent off-site to another treatment facility
Treatment of Waste in the Landfill
Treatment of Debris in the Landfill

Verification Sampling Frequency

Every batch/campaign
Annual sampling
Quarterly sampling
Tiered sampling

Type of Sample

Random
Representative
Composite
Single grab

Appendix A
Analysis of Waste Analysis Plans (WAPs) From Facilities that Treat and/or Dispose of Hazardous Wastes and Comply with Land Disposal Restrictions

EPA Region 1		
Clean Harbors of CT, Inc **CTD000604488** **Information taken from the following:** **CT Department of Energy and Environmental Protection** **RCRA (Hazardous Waste) Inspection Report Treatment, Storage, Disposal Facility** **Dates of Inspection: September 3,4,11,15 and 17, 2014** **Previous RCRA inspection: June 27 and 28, July 2 and 3, 2012.**		
• Reagents • Mixing Method • Storage post treatment • Every batch or load tested	**Page 6**	Hazardous Waste Solidification/Stabilization. Clean Harbors is permitted to perform solidification/stabilization on RCRA hazardous and non-hazardous waste at a maximum through-put rate of 360 cubic yards per day. These activities are conducted in a steel tub having a capacity of 28.8 cubic yards. The tub is located outdoors, adjacent to the tanker truck loading and unloading area, on an epoxy-coated concrete based with a coated berm. In the tubs, backhoes and shovels are used to mix RCRA hazardous semi-solids with drying and/or stabilizing agents such as ferrous sulfate, lime, kiln dust, Portland cement, fly ash, "diaper dust" (absorbent polymer) or paper pulp. The purpose is to solidify the waste (eliminate free-draining liquid) and/or stabilize it so that the

		concentrations of leachable metals do not exceed the maximum allowable contaminant concentrations for the RCRA toxicity characteristic or the land disposal requirements. Solidified and/or stabilized sludge is stored in roll-off dumpsters on an epoxy-coated concrete pad immediately nest to the tub. This area is permitted to hold up to 360 cubic yards of stabilized/solidified waste in nine, 40 cubic yard roll-off dumpsters or a combination of dumpsters and self-contained vessels (if free-draining liquids are present). Once processed, every load of solidified/stabilized waste is tested to ensure that the treatment was complete.
Clean Harbors of Braintree, MA MAD053452637		
EPA Region 2		
Cyclechem Inc NJD002200046		
Clean Earth of North Jersey NJD991291105		
Chemical Waste Management Services LLC 1550 Balmer Road Model City, NY 14107 NYD049836679 Part 373 Permit Module VIII Intermediate Commercial Waste Storage and Treatment Facilities and Land Disposal Restrictions (LDR) Attachment C Section C Waste Analysis Plan July 2013		
	VIII-1	The conditions of this Module apply to the Permittee's operation of intermediate commercial hazardous waste management units that commingle, fuel blend, and/or repackage hazardous waste which is subject to the LDRs as required by 6 NYCRR 376. The Permittee must assume generator status for LDR purposes for all hazardous waste the Permittee commingles, fuel blends, or repackages.
	C-1	The facility receives and manages virtually every type of hazardous waste identified in 6

		NYCRR Subpart 371. The waste received in bulk, drums or other containers generally fail within the following categories of materials: --wastewaters…. --inorganic solids and sludges…. --solids with organic contamination…. --organic solids and sludges…. --organic liquids….
	C-64	Sampling Methodology - Section C-2c outlines the proper sampling methods for a given waste type (solid, sludge, liquid) and containment (drum, tank, impoundment pile, etc.). CWM personnel can then obtain identification samples to help ensure accurate analytical results when a waste is analyzed. The company strives to maintain, at all times, complete compliance with the hazardous waste regulations. Because new testing requirements, such as those promulgated under the LDRs, often become effective prior to the time WAP revisions can be formally made and approved by all appropriate agencies. It is impossible to have in place an approved WAP meeting all the conditions of the immediately effective regulatory requirements.
	C-74	When a waste arrives at the facility for management, a determination has previously been made that the waste is either: --a listed hazardous waste --a characteristic waste --a waste material which is not a hazardous waste.
	C-77	C-2c(2)(c) Waste Piles Waste accessibility, frequently a function of pile size, is a key factor in the sampling strategy for a waste pile. Piles are sampled by multiple vertical sections using triers, tubing, shovels or similar devices. Large piles may be sampled with heavy tubing, soil augers, or through the use of excavation equipment such as a backhoe. In cases where size impedes access to the center or bottom of a waste pile, a set of samples that is generally representative of the entire pile ca be obtained by scheduling sampling to coincide with pile emplacement or removal. (NOTE: The use of waste piles that do not meet LDRs is prohibited, i.e., this is land disposal. If, however, the waste pile is in a containment building its permitted.
• Grab sampling	C-78	c-2c(2)(e) LDR "Grab" Sampling. The current EPA guidance for RCRA sampling is SW-846, see 40 CFR 260.11, which specifies representative and composite sampling for waste characterization. This type of sampling provides averaged concentration value or properties. The LDR, 40 CFR Part 268 have specified the use of "grab" sampling for most of the compliance demonstrations for the LDR treatment standards. For a large container, more than one grab sample may be collected. For LDR compliance, none of the samples may exceed the applicable LDR standard(s).
	C-84	C-2e Incoming Load Procedure

		"….In addition, the first shipment of wastes that are subject to the LDRs and have been treated, exempted, have a variance, or meet the appropriate treatment standard or prohibitions without treatment must be accompanied by a form from the treater or generator certifying that the treated, exempted, or variances waste meets the appropriate treatment standard, prohibition, exemption or variance and includes any applicable analytical data or reference to such data in accordance with the regulations. Generators of landfill candidate wastes must be informed that a new LDR form is required if the EPA waste codes for a waste changes. Furthermore, wastes which are subject to the LDRs and required treatment must be accompanied by a form from the generator notifying the treater that the waste required treatment and all applicable prohibitions which must be met and includes any applicable analytical data or reference to such data in accordance with the regulations. For generators who ship multiple loads of the same LDR wastes to the Permittee's facility, providing a notification form with the first load is sufficient, provided the Permittee confirms that each subsequent shipment matches the description on the original LDR form. LDR forms will be reviewed and maintained in accordance with facility SDP 1202.
• Other type of testing frequency (periodic)	**C-89**	C-2f Process Operations Procedure Existing and anticipated process operations at the facility for which current and periodic sampling and analyses is important, include the following: storage, treatment - consisting of aqueous waste treatment, fuels blending, stabilization, microencapsulation, macroencapsulation; and landfill disposal.
	C-92	C-2f(2) Treatment Operations The proper and complete treatment of a particular waste depends upon appropriate sampling and analysis during selected phases of operation. The results of this analytical program serve to determine safety constraints, confirm treatment method selections, and identify the process parameters. The treatment sampling/analysis program may be divided into three segments, each with a specific purpose: --Pre-treatment analysis confirm that the waste falls within the selected process design parameters and allow the fine tuning of the process operations conditions for optimum treatment. These analyses include pre-acceptance, incoming load and any other supplemental analyses as described for each treatment operation; --In-process analyses are performed to control the process and to monitor progress, and --Post-treatment analyses confirm that treatment was successful and that the characteristics of the process effluent are such that it can be sent to the next step (discharge, disposal, or further treatment) based upon permit or process constraints. Wastes or residue(s) resulting from the treatment of land disposal restricted wastes will be analyzed and. Or evaluated as specified in the following sections against the appropriate treatment standards listed in the regulations. Wastes or the residue from the treatment of land disposal restricted wastes that are sent offsite for further treatment or disposal will have any appropriate notification or

		certification forms.
	C-93	C-2f(2)(b) Aqueous Waste Treatment.
		"…In general, greater than 90 percent of the ww processed in the aqueous treatment plant is onsite generated leachate from the landfills and process areas. The untreated leachate (F039) was sampled and analyzed for all the constituents on the F039 LDR list. This constituted the initial characterization. The untreated leachate will be sampled and analyzed for the full LDR list of constituents every four (4) years to further ensure that no changes effecting the leachate have occurred. CWM will provide a copy of the results of the characterization to the Department, along with the results of the monthly effluent sampling and analysis. Based on review of the raw leachate characterization and the results for the parameters being routinely monitored if CWM or NYSDEC has a concern that additional constituents should be tested on a routine basis, a permit modification will be initiated.
	C-97 Modified August 2016	C-2f(5) Landfill disposal. "…for any bulk (non-soil) waste load where a sample is undergoing testing to confirm compliance with "RMU-1 Minimum Waste Strength Curves" but which does not require stabilization and TCLP testing to confirm compliance with LDRS, the load may be placed in interim storage in the landfill pending strength testing results under the following conditions: --The load must be placed on a geosynthetic separation material or a stone layer with a minimum thickness of two inches, in a distinct interim storage pile, separate from other bulk waste loads and other wastes. --Each such interim storage pile must have a flag or other marker displayed with an identifier (s) that correlates to the waste tracking information which indicates the specific waste in the pile and the date the pile was placed in the landfill. --Daily cover must be applied to all interim storage piles on the date of their placement in the landfill and maintained for the duration of each pile's storage period. --If the completed strength testing indicated compliance with minimum strength requirements, the waste may be disposed of in the landfill. If the results indicated that strength requirements have not been met, the waste will be removed from the landfill for further stabilization or other appropriate management.
	C-98 Modified December 2013	An Additional Review Program (ARP) is used to further monitor incoming waste shipments destined for the Model City landfill. Up to 10 non-miscellaneous shipments per month will be selected by the onsite DEC monitor as requiring additional review. In addition, the DEC monitors may request additional review using the sampling and analytical protocols form the ARP listed in section C-2F(5) of this permit. Any additional request will be justified by the DEC in writing. For the bulk solids, composite will be taken as described in Section C-2c(2)(a). The sample will be of sufficient volume to allow a split sample to be supplied to the DEC. If a shipment of containers is selected, a 10% composite of each non-miscellaneous profile destined for the Model City landfill on the load may be identified for additional review. Further compositing of similar waste streams may be allowed with DEC approval.

	C-98	RCRA Hazardous Waste with Numerical LDR Standards Sample will be analyzed for constituents listed for each EPA code associated with the shipments or which numerical LDR standards have been promulgated. Additional analyses may be requested by site management or NYSDEC, if justified, to address areas of concern. Examples of these analyses include: TCLP metals, PCB, volatiles, semi-volatiles. Wastes that are to be stabilized onsite will have their compliance with LDR standards verified according to the frequency specified in the CWM procedure on demonstrating that stabilized residuals meet land ban standards. The post-treatment analysis procedure specifically addresses processes, frequency of analyses, and corrective action, and are therefore, exempt from the ARP. Residues including ash from a commercial hazardous waste incinerator will be subject to reduced analytical testing. Loads destined for stabilization will be managed under site SDP for testing stabilized residuals. Loads not requiring stabilization will be tested for LDR TCLP metals and volatile with routine site detection limits. Other organics of concern will be analyzed for if requested by NYSDEC. Due to the extensive listing of constituents, F039 ARP samples will be tested for routine volatiles, semi-volatiles, and the characteristic TCLP metals.
• Post treatment storage	**C-99**	C-2f(6) Stabilization a. Stabilization of Land Disposal Restricted Waste In this process, certain LDR waste are treated to meet the appropriate LDR treatment standard or prohibition. For the purpose of this discussion, treatment will include, at a minimum, stabilization of waste, and in some instances, will include a pre-treatment step prior to stabilization the pre-treatment may include using other reagents such as oxidizing or reducing agents to chemically convert constituents into a form more suitable for stabilization. The pre-treatment analyses for LDR waste to be treated to meet a particular treatment standard or prohibition consists of the "Mandatory Analyses" for landfill (See Section C-2f(5)) and a bench scale development of a recipe suitable for achievement of these standards. This recipe will be analyzed using the appropriate test method (e.g., TCLP, etc.) to demonstrate that the LDR waste can be treated to meet the appropriate standard of prohibition and to establish the treatment guideline to be used on the waste. In addition, compression strength testing may be performed to demonstrate the strength of the treated waste. The treatment guidelines, established during the procedure, demonstrated to achieve the appropriate treatment standard, will be used to treat that LDR waste. In lieu of bench scale recipe development a previously developed and established recipe may be identified for use (e.g., recipe utilized on a similar waste). A post-treatment analysis, which includes TCLP, is conducted to assure that the process continues to be effective in meeting the treatment standards. The analysis will be performed on retained material in interim storage in containers such as roll-off boxes (See Condition

		E.1.f. in Exhibit F of Schedule I of Module I). The test frequency will be that specified in the CWM procedure on demonstrating that stabilized residuals meet land ban standards. The post-treatment analysis procedure specifically addresses processes, frequency of analyses, and corrective action. Additional "Supplemental Analysis" may be requested by the Laboratory manager to further identify a waste of confirm that the treatment standards have been met in treated waste. Stabilization operations may involve combining multiple waste streams or shipments, i.e., to optimize treatment volume. Wastes to be combined will be selected based on their chemical matrices. EPA codes and recipe requirements. For waste tracking purposes, the treatment residue will carry all waste stream identities (profile numbers and shipment identities, i.e., work order number manifest number, etc.) for batches with multiple EPA codes, the combined most restrictive standards will apply to the treated residue. b. Stabilization of Other Wastes In this operation, Portland cement and/or other stabilization reagents are mixed with Non-Land Disposal Restricted waste to treat the free liquids and/or increase compression strength of the waste. The pre-treatment analyses for these wastes include the "Mandatory analyses" for landfill (see Section C-2f(5)) and the development of a suitable recipe for increasing the compression strength. Compression strength testing may be used in order to demonstrate that the recipe works. The recipe established during this procedure will be used to treat that waste. In lieu of bench scale recipe development a previously developed and established recipe may be identified for use (e.g., recipe utilized on a similar waste). A post-treatment evaluation ensure that the material appears well mixed, that no free liquids are present. On occasion a non-LDR waste shipment of an ordinarily solid material may arrive containing a minimal amount of free liquids. These types of "off-spec" solid waste shipments may be stabilized or they may be rejected. If the "off-spec" shipment is to be stabilized, the stabilization reagent will be blended into the waste material until a homogeneous mixture is observed.
	C-101 Modified December 2013	C-2g(2) Sampling Program. Sampling procedures for specific facility operations are described in Section C-2c of the WAP. The selection of the sample collection device depends on the type of sample, the sample container, and the sampling location. In general, the methodologies used for specific materials correspond to those referenced in the regulations. The selection and use of the sampling device is supervised by a person thoroughly familiar with both the sampling and analytical requirements.

		Section C-2c(2), Specific Methods and Equipment. Sampling equipment is constructed of non-reactive materials such as glass, PVC plastic, aluminum, or stainless steel. Care is taken in the selection of the sampler to prevent contamination of the sample and to ensure compatibility of materials. for example, non fluorocarbon plastic bottles are not used to sample organic wastes and glass bottles are not used to collect hydrofluoric acid wastes. The specific material of construction to be used for each sampling activity is specified in Section C-2c(2).
	C-102 Modified August 2016	Sampling is performed for each waste stream in a manner that ensures the samples are as representative as possible under the conditions of the sampling event. Full vertical sections are drawn from tanks and containers, where appropriate and where access allows, as described in Section C-2c(2)(a). With a few exceptions, all bulk and containerized waste loads will be sampled. Containers samples that are related to one generator and one process may be composited prior to analysis, provided that individual samples are similar in physical appearance. Precautions are taken to minimize loss of volatile.
• Reagents	C-108 Modified August 2016	Stabilization Evaluation - The waste to be stabilized is mixed with at least one combination of cement kiln dust and/or other suitable reagent(s). Heat change (as evidence of curing) which occurs is recorded as the waste/reagent(s) mixture is "setting". The occurrence of any violent reactions of reagent(s) to waste sample is noted.
• Other Type of Testing Frequency (as needed)	Figure C-5	Landfill and Stabilization Process Incoming and Pre-treatment Pre-treatment and Incoming analysis (as needed) --Mandatory analysis --Suitability for landfill --Total and leachable metals --Organic limit analysis --Supplemental analysis In process - stabilization --In-process analysis (if needed) Post Treatment Analysis (as needed) --TCLP --Compressive strength Landfill disposal

EPA Region 3		
Clean Harbors of Baltimore CHS Permit No A-151 Attachment No 1 Waste Analysis Plan Renewal Supplement to N.O.D. Response 10/27/2005 MDD980555189		
	Page 5/86	Clean Harbors of Baltimore, Inc., operates a commercial hazardous waste storage, transfer, and treatment facility. CHBI utilizes a variety of waste handling operations to treat hazardous and non-hazardous wastes on-site and to store/transfer hazardous wastes including treatment residues for permitted offsite reuse, treatment and/or disposal. Wastes are typically transported to the facility in bulk (tanker, roll-off, railcar) and non-bulk (55 gallon drum, gas cylinder) and may be gaseous, liquid, semi-solid and/ or solid in nature. Liquid Treatment includes: neutralization, chemical reduction, chemical oxidation, ammonia stripping, chelation breaking, chemical ppt/coagulation; filtration/solid removal, phase separation. Storage and stabilization/fixation of semisolid, solid wastes and process treatment residuals in preparation for offsite disposal.
	Page 11/86	Waste Analysis Plan. The WAP has been developed to document the procedures which shall be used to identify the acceptability of waste materials intended for storage, treatment, and/or transfer at CHBI and determine whether treated waste streams meet appropriate limitation prior to further management. Specific WAP requirements and procedures are grouped into one of Eight general waste categories based on the particular storage, treatment, or handling operations that a waste stream is subjected to while at CHBI. (8) Stabilization Treatment - The waste streams in this category include hazardous wastes generated onsite or accepted from offsite. These wastes undergo prequalification testing, onsite conformance testing and pre-/post-treatment testing to ensure that: 1. The waste is amendable to the treatment process; 2. The integrity of the treatment process and the health/safety of facility staff will not be compromised by handling the waste; and 3. All applicable LDR treatment standards are met.
	Page 18/86	2.2.4.4 Stabilization. In addition to the general pre-qualification analysis required in section

		2.2.4, CHBI will perform a TCLP "quick" test and a treatability test on the representative sample provided by the generator. The TCLP quick test is performed to determine the approximate metals concentration in the material intended for stabilization. The TCLP quick test is performed by placing a sample of material in a blender, addition the appropriate extraction fluid and running the blender for approximately 20 minutes. The blended material is filtered and analysis performed on the filtrate. It has been Clean Harbor's experience at CHBI and other Clean Harbor's plants that the TCLP "quick" test provides analytical results that are similar to a TCLP test which requires an 18-hour sample extraction time. CHBI then performs a treatability test of the waste intended for stabilization by adding measured amounts of stabilizing agent to the waste sample. The effectiveness of the stabilization is determined through TCLP "quick" test analysis. CHBI may conduct several different stabilizations to determine the most effective treatment recipe.
	Page23/86	Stabilization Treatment. Upon arrival at the facility, all stabilization treatment wastes will undergo mandatory conformance analysis. The conformance testing includes basic screening procedures to provide a general characterization of the waste which is used to assure that the waste shipped matches the waste that was approved during the pre-qualification process. Conformance testing parameters for stabilization treatment wastes are listed in Table 1-4. In the event that the conformance screening is inconclusive or identifies any potential discrepancy, the CHBI technical staff may require one or more supplemental analyses to provide a more accurate evaluation of the incoming waste. Supplemental analyses are listed and described in Table 1-5. Incoming loads destined for stabilization are also analyzed via a TCLP "quick" test, and a representative sample of the waste is collected and a bench scale stabilization is performed using the recipe developed during waste pre-qualification. This bench scale test will help CHBI refine and optimize the treatment recipe. Each incoming bulk load shall be sampled and analyzed for the conformance testing parameters as described in Section 2.4. For multiple bulk shipments of the same waste received on the same day from the same generator, CHBI shall test the first shipment, and then every fifth shipment thereafter. Each incoming container shipment, with the exception of lab packs and other special wastes, shall be sampled and analyzed for the conformance testing parameters as described in Section 2.4. samples from containers of the same waste stream (from the same generator) may be composited prior to analysis as discussed in Section 2.3.2.

	Page 28/86	2.5.5.1. Stabilization Treatment Incoming stabilization treatment wastes shall be considered "nonconforming" when knowledge and/or analytical data identifies the presence of unanticipated contaminants or characteristics which preclude onsite treatment for one or more of the following reasons: --The waste meets the description of an EPA waste code that is not on the list of authorized treatment codes in Table 1-3 --The waste is potentially incompatible with other materials to be stored/treated; or --An effective treatment recipe cannot be developed for a sample of the material. Wastes which carry an EPA waste code that is not on the list of authorized storage and transfer waste codes will not be accepted at the facility. But will be rejected back to the generator, or an alternate treatment, storage or disposal facility at the direction of the generator. Non-conforming stabilization wastes shall not automatically be rejected from the facility. CHBI shall to the extent possible, redirect a nonconforming stabilization wastes to other onsite treatment processes or to the storage and transfer portion of the facility pending re-shipment to a suitable off-site facility. CHBI may also handle other non-conformance issues as described in Section 2.5 above.
• Reagents	Page 31/86	2.8.2 Stabilization In addition to performing compatibility testing, CHBI also conducts pre-processing bench scale testing to determine the appropriate treatment chemicals and mixing ratios of all waste streams undergoing stabilization. Once the stabilization recipe has been verified, wastes are emptied into a mixbox, roll-off or dump trailer. The appropriate amount of cement or pozzolanic material is added to the waste based on the stabilization recipe and mixed within the mixbox, roll-off or dump trailer. Upon completion of the treatment process, treated residues are analyzed for compliance with ALL APPLICABLE LDR standards (40 CFR Part 268) and off-site facility treatment/disposal facility acceptance criteria. For wastes which were characteristic prior to stabilization, the stabilized material is first analyzed using the TCLP "quick" test. If the stabilized material fails the "quick" test, additional stabilization is performed. If the material passes the TCLP "quick" test, CHBI will then perform a TCLP test in accordance with 40 CR part 261.APPENDIX II as further verification that the stabilized material is non-hazardous.
	Page 32/86	2.10 LDR Requirements 2.10.1 Waste Testing 2.10.1.1 Incoming Waste Testing All incoming hazardous waste streams are subject to pre-qualification analyses and facility acceptance fingerprinting. All generators shall be required to comply with the LDR

		documentation requirements described in section 2.10.2 below for each incoming shipment of restricted waste. 2.10.1.2 Outgoing Hazardous Waste Streams As a generator/treater of hazardous wastes, CHBI shall provide LDR documentation as described in Section 2.10.2 below for each shipment of restricted hazardous waste that is shipped from CHBI to an off-site treatment or disposal facility. There are two types of hazardous waste which may shipped from the facility ■ Wastes that are produced by CHBI through an onsite treatment process (e.g., stabilization, wastewater treatment, etc.) analytical procedures, or other associated activities; and ■ Wastes that are accepted for storage/transfer or transshipment, and that are transferred to an off-site facility in their original container or in bulk or repackaged from without any on-site treatment. CHBI shall determine the LDR status of the waste streams produced at the site by applying its knowledge of the waste or by conducting analytical testing prior to shipment. In the case of non-treatment storage/transfer waste, CHBI may rely on the information provided by the original generator (as verified by the CHBI's waste acceptance procedures) to determine the specific LDR status of the waste.
	Page 33/86	CHBI's onsite treatment systems treat listed (i.e., F, K, U and P codes) and characteristic (I.e., D code) hazardous waste streams. The treatment process generates a treated effluent which is discharged to the City of Baltimore POTW system and residues (dewatered sludge) which are shipped for offsite treatment and or disposal. The sludge generated from the treatment processes retains all listed hazardous waste codes from the original influent waste streams (via the "derived-from" rule) and any characteristic codes for which the sludge fails the TCLP. Hazardous waste sludges. solids generated on-site or accepted from offsite are treated using stabilization/fixation technologies to meet applicable LDR treatment standards. The treatment residues from the stabilization process may yield --A non-hazardous waste, in the case of a characteristic waste successfully treated to below all LDR treatment standards --A non-hazardous waste, I the case of a characteristic waste successfully treated to bellow the characteristic LDR treatment standard, but for which treatment of UHCs is still required to meet the LDR treatment standard; --A characteristic hazardous wastes if the treatment residue exhibits a characteristic after treatment or --A listed hazardous wastes, from the treatment of a listed hazardous waste (via the "derived-from" rule). CHBI conducts TCLP analysis for each batch of waste that has undergone stabilization to

• Every batch or load tested		determine the proper waste identification (non-hazardous or hazardous) and to confirm that all applicable LDR treatment standards have been achieved. 2.10.2 LDR Documentation Requirements Pursuant to 40 CFR 268.7, CHBI is responsible or maintain copies of the LDR documentation prepared by the original generator and accompanying each shipment into the facility. CHBI is also responsible for preparing and keeping LDR documentation for each load of hazardous waste generated at and shipped from the facility. The content and format requirements for the various types of LDR documents are summarized below.
	Page 57/86	NOTE: In section 1.2.7, there is no mention of whether organics or inorganics are treated by stabilization however Table 1-3 (Page 70-71) and Table 1-2 (57-69) mention that organics can be treated by MACRO.
	Page 70/86	Table 1-3 Stabilization/Fixation Prior to Offsite Disposal. (NOTE: Includes characteristic and Listed wastes that include organics)
	Page 85/86	Table 1-7 Sampling Methods. Tank/Tank truck Liquid sample (Single grab sample) Semi solid Grab sample, one vertical core sample through depth of truck) Roll-off or dump trailer Solid (one grab sample, three vertical core samples through depth of truck, Front and middle back composited) Semi-solid Grab sample (one vertical core sample through depth of rolloff) Drums Liquid (simple random sampling, one drum sampled per every 10 drums on the load that have the same profile) Solid (simple random sampling, one drum sampled per every 10 drums on the load that have the same profile) Semi solid (simple random sampling. Grab sample. One drum sampled per every 10 on the load that have the same profile) (NOTE: No sampling information on stabilized wastes.)
Max Environmental Technologies, Inc. Yukon Facility Westmoreland County, PA Waste Analysis and Classification Plan Revised August 2015 PAD004835146		
	Page 2	MAX accepts hazardous and residual wastes from off-site generators and other TSDFs. Residual liquid and solid wastes are accepted for treatment and disposal on site. Hazardous liquid and solid wastes are accepted for treatment onsite and disposed, following treatment as a residual waste either onsite or offsite at permitted residual waste disposal facilities. Hazardous and residual wastes may be stored onsite.

		The treatment processes employed includes neutralization/precipitation, solidification/stabilization, chemical reduction, chemical oxidation and oil removal.
• Reagents • Mixing Method • Other (representative sample from 4 locations) • Every batch or load tested • Post treatment storage	**Page 3**	Waste Solidification/Stabilization MAX is permitted to use S/S agents other than, and in addition to lime in its waste treatment processes. Included are cements, CKD, flyash, bentonite/clays, silicates, aluminates, and proprietary chemicals, among others. The use of these additives, either singly, in combination, or in combination with other reagents is recognized as an appropriate technique for the treatment of wastes containing metallics and serves as the basis for many of the treatment standards established by the USEPA under the LDR program. The processes developed using these additives result in the production of a low-strength cement which adsorbs and/or microencapsulates the waste the cementitious matric. Treatments using these adsorption/microencapsulation agents will be performed in the SWSS and Mechanical Processing Units (Note: Waste treatment using one or more of these agents may also be performed in the other waste treatment units installed at the facility provided the treatment residues can be adequately handled in those systems.) The wastes will be unload directly into one of the SWSS unit compartments or to a silo. The introduction of liquid wastes to the SWSS Unit is allowed by virtue of the design of the units as tanks with interstitial monitoring. Liquid addition will be an integral part of the mechanical process. The additives required to effectively treat the waste will then be added and the waste and additive mixed with a backhoe/excavator in the SWSS or with mixing blades in the mechanical processing unit. Additives may also be placed in the SWSS unit prior to the introduction of waste to facilitate waste/chemical mixing. Water will be added in combination with the treatment additives as needed to activate the pozzolanic proprieties of the S/S agents. Appropriate additive and water dosages will be established through laboratory-scale treatability studies performed prior to the acceptance of the first shipment of the waste and experience gained thereafter during actual waste treatment. Following treatment, a representative sample of the treated waste will be collected and subjected to analysis to verify the adequacy of the treatment process. Pending treatment verification, the waste may be held in the SWSS unit, on floor of the containment buildings, or transferred into containers (roll-off containers, dump trailers) for storage. Wastes that are verified as successfully treated will be transported by vehicle and disposed of into the on-site disposal unit. Maximization of treatment Using SWSS Unit MAX may elect to combine similar wastes from multiple generators for treatment in the SWSS unit. For example, MAX currently receives sandblast residues from a number of generators. Each of these wastes exhibits the lead toxicity characteristic and each is treated by the same process using the same treatment additives. Co-treatment of these wastes can be performed

		in the SWSS units with no loss of treatment adequacy.
	Page 5	Hazardous wastes authorized for treatment and storage at the facility include: D002, D004-D008, D010,D011,K062,K061.
	Page 19	5.4 Waste Treatment Units. All waste treatment operations conducted at the facility is performed in tanks or mechanical processing units. 5.4.1 Liquid Treatment Tanks. Samples from the tanks used for the treatment of waste in liquid form are typically obtained using a weighted bottle. Samples are typically collected at a minimum of three depths and composited in the container to ensure that sample is representative of the tank contents. The depths sampled are usually the upper third, the middle third, and the lower third of the unit. 5.4.2 Solid Processing Tanks and Mechanical Processing Units. Samples from the tank or mechanical units used for processing in solid form are obtained by collecting samples from a minimum of four locations spaced evenly along the length of the tank or storage container. An excavator bucket may be used to collect the sample from a tank while the storage container can typically be accessed with a scoop or shovel. An aliquot is removed from each excavator bucket or storage container using a scoop and composited into a sample container. The composite sample is adequately mixed and delivered to the laboratory for analysis. Samples of wastes processed in solid form may also be obtained from the containers into which the treated waste is transferred for storage prior to shipment to the disposal unit. Using a trier or scoop, depending on the physical characteristics of the waste, each container holding waste from the treatment batch is sampled following the procedures for waste shipment sampling. Aliquots from each container sample are then used to develop a representative composite for analysis. The composite sample is analyzed for the pertinent chemical constituents specified on the Waste Receipt Record. Appendix J contains a detailed description of the sampling and analytical procedures to be performed on the waste at a later date, a portion of the sample is placed into suitable containers and refrigerated pending analysis. In addition, a 500-gram sample of the waste is refrigerated and kept at the facility for a minimum of 48 hours in the event that additional testing is required.
	Page 24	7.0 Data Interpretation 7.2 80/90/100 rule The results of analyses performed on treated wastes are within 80% or 90% of the treatment standard, then that waste batch is subject to the 80/90/100 rule. This rule states that for a waste to be interpreted as attaining the applicable criteria, a minimum of one sample result is

		required provided the result is less than or equal to 80% of the criteria, a minimum of two ample results are required if one of the results are greater than 80% of the criteria but less than or equal to 90% of the criteria and a minimum of three sample results are required if one of the results exceeds 90% of the criteria. The results must be obtained from independently collected and prepared sample. This rule is applied if the waste batch is judged to have been successfully treated. If the waste batch is not judged to have been successfully treated, then the entire batch will be retreated and retested.
	Page 25	8.0 Recordkeeping. All records associated with the management of wastes at the facility are maintained in the facility operating record until closure of the facility. Record on waste receipt and waste tracking, including analytical reports are archived for a minimum of three years.
	Page 26	9.0 Other considerations 9.2 Treatment chemicals Many of the treatment chemicals used at the facility are virgin products purchased from chemical manufacturers/suppliers. However, MAX also uses off-spec chemicals, chemicals generated from waste recycling operations and manufacturing by-products as reagents in its waste treatment processes. Non-virgin reagent testing is performed for ferrous sulfate generated from waste acid recovery systems. The testing program consists of the annual analysis of representative sample of the regent for metals. Other parameters may be included in the testing program depending on the source of the reagent. The metals analyzed include, arsenic, barium, cadmium, chromium. Lead, mercury, nickel, selenium. Silver and any other that are of concern under the LDT treatment standards program.
Envirite of Pennsylvania, Inc. (US Ecology York) PAD010154045 WAP Date: January 2017 (Rev.17.0) July 2017 (rev. 17.1)		
• Every batch or load tested	Page 1	Most important phase of WAP is the testing which verifies that all treatment residues meet the regulatory standards before they are released for off-site disposal. Page 48. "every batch is sampled as it is discharged from the blender to the dump trailer."
	Page 8	Facility utilizes "treatment simulation" but no details provided
	Page 11	States that if characteristic waste is mixed with listed waste, then waste will be treated as listed, this is not always correct see 40 CFR 268.9(b).
	Page 16	Incoming verification at least once per year.
	Page 18	In process waste analysis occurs for liquids (Cd, Cr, Cu, Pb, Ni, and Zn) and solids (Cd, Cr, Pb, Ni).

	Page 20	Sample collection procedures for the treatment residues are outlined in the Sampling Plan.
	Page 23	2.1.15 LDR. In accordance with 40 CFR Part 268, Envirite ensures that the applicable LDR requirements are addressed through waste analysis information obtained from the pre-acceptance, waste receiving, and acceptance stages of the waste management. Based on the identified waste codes and hazardous constituent information obtained from these sources, Envirite will verify the appropriate treatment standards applicable to each waste stream received to ensure that they are managed as specified in 40 CFR Part 268. In addition, hazardous waste shipments subject to the LDR program must be accompanied by a proper LDR notification/Certification Form or equivalent. Appendix 2-h from the generator when required under 40 CFR 268.7. Following treatment at the facility, the waste is again evaluated pursuant to 40 CFR 268.7 to ensure that all applicable treatment standards have been identified. For example, waste that have been treated at the facility, the resultant treatment residue will be analyzed to determine whether the treatment standards specified for the wastes have been met. Wastes that are subsequently sent off-site by Envirite for further management or disposal will be accompanied by the proper LDR Notification/Certification form when required under 40 CFR 268.7.
	Page 25	Waste Analysis - Hazard Classification Typical Range of Hazardous Constituents (maximum shown) - Cadmium 10%; Chromium 30%; CN 20%; Ni 30%; Lead 30%
	Page 26	Table 2-13 Summary of Waste Category and Treatability Group for Various Waste Codes. Table identifies the following columns: EPA waste code; subcategory; treatability group and regulated constituent. Note: There is no column for "Underlying Hazardous Constituents."
• Other (representative samples using composite sampling)	Page 29	To ensure the collection of representative samples of wastes, either liquid or solid, that Envirite may handle in the scope of its operations. These operations include the transportation, storage, treatment, and disposal of hazardous and non-hazardous residual wastes. Representative samples are defined as samples exhibiting average properties of the whole waste and address the issue of sampling accuracy - the closeness of a sample value to its true value. Sufficiently accurate samples will be considered reliable estimates of the chemical properties of the waste. Sampling accuracy will be achieved by composite sampling which entails collecting several random samples which will be combined into a single sample.
• Every batch or load tested • Mixing Method	Page 35-42	In Process Batch Sample Collection. Liquid in process batch samples are collected from the liquids processing batching tanks/reactors. All reactors have mechanical agitation that ensures homogenous samples. The sample sprout is opened and material allowed to drain into a waste pail for five (5) to ten (10) seconds. Solids In-process batch samples are collected from the solids processing blender or pit mixing tank. An appropriate sampling device such as sampling hoe/disposable wooden tongue depressor/metal spatula is used to collect samples. Pit mix. After solids processing batches

		from the pit mixing tank are mixed to a uniform appearance, via hydraulic excavator/backhoe bucket, the bucket scoops a sample for the operator to secure a sample. The operator utilizes a wide-blade metal spatula or hoe to transfer the sample into a plastic bucket. Final Treatment Certification Sample Collection. Aqueous Phase. At 24 hour intervals, a representative sample is taken from the sample container. This sample represent a 24-hour composite of the aqueous discharge. (NOTE: Is the first sentence incorrect?) Sludge/Solid Phase: Each individual liquids processing batch is sampled…Samples are taken from the filter press by using a wide-blade spatula or tongue depressor to scrape the sludge from a filter plate prior to the drop. Solids Processing Treatment Certification - Blender. Each individual solids processing batch is sampled. Solids processing batches made in the blender are sampled immediately prior to discharging the batches from the blender to the transfer container below. Repetitive sampling is necessary to fill the sample containers completely, with no headspace. Solids Processing Treatment Certification - Pit Mixing. Each individual solids processing batch is sampled. The sample container is a pre-cleaned plastic bucket and lid. After solids processing batches are mixed to a uniform appearance, using the hydraulic excavator/backhoe bucket, use the bucket to secure a treatment residue sample. Collect a representative sample from the excavator/backhoe, placing it into the plastic sample bucket using the sampling hoe, disposable wooden tongue depressors, or metal spatula. If required, VOC analysis must be completed within 14 days of sample collection, If required, semi VOCs extractions must be completed within 14 days, analysis 40 days. CN analyses must be completed within 14 days, Inorganic/metal analyses must be completed within six months (NOTE: Where is the waste stored during this six month time period?) At the end of each defined processing period, processing composites are made. Based upon operational and analytical needs this may consist of separate composites for LPU and SPU delisting processing, a combined LPU/SPU processing composite and/or a de-characterized processing composite. Composites are made by mixing weight proportioned aliquots of each batch processed during the defined processing period. The amount of each batch used is dependent upon the number of batches processed during the time period and the total volume of treatment residue produced. Aliquots of individual batch samples are weighed out and quantitatively transferred out to a stainless steel mixing bowl. After all the aliquots have been added to the mixing bowl, the sludge is mechanically mixed for a minimum of 10 minutes to homogenize the mixture.
	Page 48 Table	Final treatment Certification/Liquids Processing. The frequency of sample collection for the aqueous phase is a flow proportional composite. For the final treatment certification/solids

		processing the frequency of sludge/solid phase sampling is every batch is sampled as it is discharged from the blender to the dump trailer.
Cyclechem **550 Industrial Drive** **Lewisberry, PA 17339-9537** **(717)938-4700** **PAD067098822** **WAP: Revised December 9, 2013**		
	Page 5	CycleChem is a RCRA Part B permitted TSD and a Residual Waste Processing facility with the permitted ability to render corrosive (D002), reactive sulfide (D003), and RCRA metal characteristic wastes (D004-D011) non-hazardous for land disposal.
	Page 21	Incoming bulk liquid and bulk solid wastes granted Final Code Approval will be unloaded/placed into their respective proper storage areas. If they are to be treated/processed within the shift during which they have been accepted, the waste may be off-loaded/placed directly into the treatment/processing equipment/area without prior on-site storage. (Note: The waste must always be in a tank, container or containment bldg if LDRs have not been met)
	Page 21	CycleChem normally stores hazardous and residual waste material until a sufficient quantity is obtained to commence an on-site treatment/processing or to ship to a treatment facilities….No disposal activities are conducted at the site. (Note: See "Note" above)
• Other (representative sample)	Page 21	Treatment is performed in batch. Once the batch treatment procedures are completed, a sample is collected and analyzed to assure the treatment standards have been meet (stet)...the pH of the batch has to be greater than 2.00 and less than 12.50. <u>In the case of metal microencapsulation, a representative sample will be taken.</u> The sample will be analyzed by an accredited lab to assure the TCLP metal levels have been treated below 40 CFR 268.40 treatment standards.
	Page 26	(3) For waste that has been treated, that waste will be sampled and analyzed for applicable hazardous constituents. The Cycle Chem facility will comply with all Federal Regulations and the RCRA of 1976 Land Disposal Prohibitions.
Republic Environmental Systems, LLC **PAD085690592**		
EPA Region 4		
Chemical Waste Management **ALD000622464**		

Waste Characteristics Revision No 4.3 July 28, 2016		
	Section C Page 2 NOTE: This language does not include the requirement of 40 CFR Part 268, the LDR requirements.	The facility has developed this WAP to ensure a detailed chemical and physical analysis of a representative sample of the waste. After performing the analyses and procedures identified in this WAP or by applying knowledge of the waste, the Facility will have all appropriate information to treat, store and dispose of the waste in accordance with the applicable requirements of 40 CFR 264 and ADEM 335-14-5. An up to date copy of the WAP will be available at the Facility at all times.
	Page 2	C-2-1 Introduction. The purpose of this WAP is to identify and document the necessary sampling methodologies. Analytical techniques, and overall procedures that are undertaken for all hazardous wastes that either: 1. Enter this Facility for treatment, storage, and disposal, or 2. Are generated by this Facility and are treated or disposed of on-site. Specifically, the WAP delineates the following: Sampling methodology; Analytical Parameters, Techniques, and Rationale; Acceptance procedures; incoming waste shipment procedures; process operations procedures; and quality control policy.
	Page 8	Re-evaluation Process. A waste stream re-evaluation will be conducted periodically to ensure that the waste analysis procedures employed by the facility are accurate and up to date. At a minimum, the analysis or acceptable knowledge must be repeated or verified: --when the facility is notified, or has reason to believe that the process or operation generating the hazardous waste, or non-hazardous wastes if applicable under 335-14-5-07(409d) has changed and --when the results of the inspection or analysis as described in this WAP indicate that the hazardous waste received at the facility does not match the waste as described on the accompanying manifest or shipping paper; or --every two years.
	Page 11	Debris - A visual inspection of 100% of debris loads will be performed to ensure the waste is as profiled and conforms to the definition of debris. For the purpose of defining debris in the case of mixtures (debris/non-debris), USEPA has provided guidance as to visual inspection. If the content of the container consists of primarily debris by volume, then the contents will be subject to the regulation as debris. Additional, an intact container of over 50% debris - which consist of friable asbestos, paint filters, pant/solvent rags or mercaptan - with less than 10% void space may be macro-encapsulated. Deviation from this condition would require ADEM approval.

	Page 12	C-2-6 Process Operations Procedures The primary process operations of the facility are storage, treatment and disposal. Specific details regarding the analytical procedures of these operations are presented below.
• Other Type of Testing Frequency (First batch, annually thereafter) • Other (Grab sampling to collect representative samples) • Every batch or load tested (if different wastes are consolidated)	**Page 13**	Treatment. The treatment of a particular waste necessitates appropriate sampling and analysis during selected phases of the operation. The results of this analytical program serve to determine safety constraints, confirm treatment method selection, and identify the process parameters. The treatment sampling/analysis program is normally divided into three segments, each with a specific purpose. --Pre-treatment analyses confirm that the waste is within the selected process design parameters and allow the refinement of the process operational conditions for optimum treatment; --In process analyses are performed to control the process and/or to monitor progress; and --Post-treatment analyses confirm that the treatment was successful and that the characteristics of the process effluent are such that it can be sent to the next step (disposal or further treatment) based upon permit, regulatory, or process constraints. Any residues or waste sent off-site for disposal or further treatment will have the appropriate notification, and/or certification form. Stabilization. Stabilization can be used to treat (i.e., immobilize or reduce the toxicity of) certain inorganic compounds, including some LDR inorganic compounds. In this process, the wastes are mixed with a stabilizing agent and/or other suitable reagents that cause a chemical reaction producing a treated mixture suitable for land disposal. As outlined in the LDR stabilization Evaluation test found in Appendix C-1, a sample of the waste may be stabilized and then analyzed to establish the mix ratio of reagent (s) to waste to be used to treat the waste. If the LDR stabilization evaluation is to performed on a sample of the waste prior to receipt, it will be performed after treatment of the waste, with a previously developed and established mix ratio. The facility may use experience and historical supporting analytical data to assign a pre-determined mix ratio in lieu of a pre-acceptance sample. The Facility may, for operating efficiency and to utilize maximum processing capacity, combine several wastes or shipments from various generators. Batch treatment of multiple waste streams will be based on waste compatibility, hazardous waste codes, and treatment standards. In all cases, these consolidated wastes will be tested after treatment in order to confirm that the waste meets the appropriate treatment standards. An untreated sample of the initial load to be treated by stabilization will be analyzed for the inorganic TCLP constituents to establish an untreated base line value. The base line value of the untreated waste constituent(s) will be checked randomly on 2% of the shipments from a

		single waste stream. If the constituents(s) concentration(s) is greater than one (1) order of magnitude above the base line value (i.e., the range for a 10 ppm TCLP-Pb stream would be from 1 to 100 ppm TCLP-Pb), the treated load of the waste stream will be held for post treatment TCLP analysis to determine whether the treatment standards were achieved. Post-treatment evaluation will confirm that the mix ratio used to stabilize the shipment of waste has achieved the appropriate treatment standard. Post-treatment testing for all applicable inorganic LDR constituents being treated will be performed on the first load process of each waste stream and on the first load received after twelve (12) months from the previous post treatment analysis done on that waste stream. If the treated load does not pass LDR standards, it will be retreated and retested until it passes the applicable LDR standards. (NOTE: There could be dilution issues here) All waste streams must be stabilized within the stabilization unit, which is maintained to deliver reagents(s) within 95% of the selected mix ratio. Stabilization loads not meeting this criterion may be held for post-treatment analysis.
	Page 17	C-2-6b (6) Treatment of Hazardous Debris. Hazardous debris requiring treatment must be treated prior to land disposal by either the Alternative Treatment Standards for Hazardous Debris, 40 CFR 268.45, Table 1 and ADEM Administrative Code Rule 335-14-9-04, or the waste specific treatment standards for the waste contaminating the debris. To render the hazardous debris acceptable for land disposal, one or more physical and or chemical treatment technologies may be employed. Physical treatment techniques such as size reduction, micro- or macroencapsulation, waste separation by components, blending and bulking, and leaching, etc. may be employed to render wastes acceptable for landfill disposal or more amendable to subsequent stabilization or management in containers or tanks. Non-debris waste material segregated during the debris treatment process shall undergo further treatment depending on the associated contaminants or EPA Hazardous waste codes identified and listed in 40 CFR Part 261 and…. Debris treatment residuals requiring LDR stabilization will receive post-treatment testing to verify that the treated waste is meeting the applicable treatment standard prior to landfill disposal. Post-treatment analysis for treated debris consists of a visual inspection of the treated hazardous debris, performed to confirm that the hazardous debris treatment technology conducted has treated the waste to meet the designated performance and/or design and operating standards and any contaminant restrictions identified in 40 CFR 268.45 and ….
	Section C,	Corroborative Testing Protocol

	Figures Page 1 of 2	Waste Stream Meets Treatment Standards/Certified by Generator supplied analysis 1. Codes with organic constituents only - corroborative testing will be performed on 2 organic compounds 2. Codes with inorganic constituents only: corroborative testing will be performed on 2 inorganic compounds 3. Codes with both inorganic and organic constituents: corroborative testing will be performed on 1 inorganic and 1 organic compound.
		Corroborative Testing Protocol Corroborative testing will be conducted on waste streams which have been certified by the generator as meeting treatment standards. The selected subset of LDR constituents, contained in the listed and characteristic codes identified by the generator or treater, which cause the waste to be hazardous, will be based on the following: --<u>If the waste is hazardous for organic constituents only</u> ---If there are any organic hazardous constituent detections listed on the generator analysis, these compounds will be selected for corroborative testing. ---No more than 2 compounds will be selected. The will be chosen based on highest boiling points of hazardous constituents detected. ---If the generator provided analysis shows all hazardous constituents below method detection level, 2 hazardous organic constituents will be chosen based on highest boiling point. --<u>If the waste is hazardous for inorganic constituents only</u> ---If there are any inorganic hazardous constituent detections listed on the generator analysis, these compounds will be selected **corroborative testing**. ---No more than 2 compounds will be selected. They will be chosen based on highest boiling points of hazardous constituents detected. ---If the generator-provided analysis shows all hazardous constituents below method detection level, 2 hazardous inorganic constituents will be chosen based on highest boiling point. --If the waste is hazardous for both inorganic and organic constituents ---One inorganic and 1 organic constituent will be selected for corroborative testing. ---If there is any hazardous constituent detection on the generator analysis, these compounds will be selected for corroborative testing. ---No more than 2 constituents will be chosen. They will be chosen based on highest boiling points of hazardous constituents detected. ---If the generator -provided analysis shows all hazardous constituents below method detection level, 1 inorganic and 1 organic will be chosen based on highest boiling point.
	Section c, Appendix C-1 Page 2	<u>Land Disposal Restrictions (LDR) Stabilization Evaluation Test</u> This procedure is to be performed to demonstrate whether or not an LDR waste can be stabilized to meet the appropriate treatment standard and to establish the mix ratio of reagent(s) to LDR waste that will achieve that standard. Any incompatibilities between waste

		and reagent(s) are noted. --A mix ratio of reagent(s) to waste will be prepared to determine the appropriate mix ratio to be used for stabilizing the LDR waste. --Place approximately 100 grams (NOTE: 100 grams is equal to a stick of butter, ½ cup) of pre-acceptance sample of the LDR waste to be stabilized into a suitable container, such as an 8 ounce wide mouth jar. Starting with the lowest ratio first, place that ratio of reagent(s) into the jar and mix for at least 1 minute or until homogeneous. After mixing has been completed, an aliquot of the stabilized sample of the LDR waste will be analyzed using the appropriate procedure (e.g., TCLP, etc.) to demonstrate that the appropriate treatment standard and/or prohibition can be met. --It may be necessary to evaluate additional ratios until the optimum ration has been identified. the lowest mix ratio which meets the required treatment standard is the mix ratio of reagent(s) to waste which is to be used to stabilize the incoming waste shipments.
	Section C, Appendix C-2 Page 1	Land Disposal Restriction Sampling and Analysis The procedures described herein represent the sampling and analytical procedures established for use at the Facility for the treatment, storage, and disposal of LDR hazardous waste. Corroborative testing will be conducted on waste streams which have been certified by the generator as meeting the treatment standards prior to receipt, both treated or naturally meeting, as specified in 40 CFR Part 268. If treated by the generator, information as to the treatment process will be provided to WM prior to receipt. Corroborative testing will not be performed on waste which has been certified by a WM hazardous waste management facility as meeting all treatment standards prior to receipt, unless the waste was certified by a WM hazardous waste management facility as meeting all standards using only generator knowledge. At a minimum, each LDR waste stream that has been certified by the generator as meeting treatment standards will be subject to testing of the first shipment, excluding those listed at C-2-5a(1) in Section C, and annually thereafter, to ensure the wastes meet LDR Standards. Each waste will be analyzed for those LDR constituents, or a subset of those constituents, contained in the listed and characteristic codes identified by the generator or treater, which cause the waste to be hazardous. A subset of constituents will be chosen based on the flow chart shown in figure C-2-14. Per the LDR, 40 CFR Part 268 and ADEM….., the Facility will use grab sampling or the extract method (EPA method 1311) to collect representative samples for LDR compliance demonstrations.

EWS Alabama, Inc ALD981020894		
Perma-fix of Florida, Inc. FLD980711071		
AES Environmental, LLC KYD985073196		
Ecoflo, Inc NCD980842132		
Tradebe Treatment and Recycling of Tennessee, LLC TND982109142		
Diversified Scientific Services, Inc. (DSSI) TND982109142		
East Tennessee Material and Energy Corporation TNR000005397		
EPA Region 5		
Envirite of Illinois, Inc Harvey, Illinois WAP Revision 16.1 June 2016 ILD000666206		
	Page 4	The company treats a variety of wastes within a specific range of the universe of hazardous wastes. There can be a wide variation of waste characteristics within a US EPA hazardous

		waste code or category. This is particularly true for wastes from non-specific sources (F codes) and characteristic wasted (D codes). As waste is processed through the plant, every step is carried out exclusively under the written instructions from the laboratory. The laboratory staff refers to the information obtained during analysis of both the pre-screening sample and the sample which was taken from the incoming waste shipment as they follow the progress of each batch of waste. Each batch is sampled and analyzed several times during the treatment process. Perhaps the most important part of the company's WAP is the testing program which verifies that all treatment residues meet the regulatory standards before they are taken off-site for disposal.
	Page 7	On an annual basis, each waste stream generator will be required to submit a certification that their waste stream has not materially changed. TCLP analysis of waste streams is repeated at least once every five years. This reanalysis is required to assure that the appropriate treatment standards are being met per the LDR, and to provide another level of quality control for the waste acceptance process.
• Every batch or load tested	Page 9	Analysis During Waste Treatment As each waste shipment is processed through the plant, every step is carried out under written instructions from the laboratory. The laboratory staff refers to the information obtained during analysis of the prescreening sample and the sample taken from the actual shipment as they follow the progress of each batch of waste. Each batch is sampled and analyzed several times during the treatment process. Sample collection procedures for in-process waste treatment are outlined in the company's sampling plan. Final Treatment Certification Aqueous Phase The aqueous phase of each liquids processing batch is analyzed for pH and metals before it is released to filtration. The batch is retained in the reactor until it is confirmed that the aqueous phase meets the discharge limitation for the facility. The aqueous discharge from the plant is sampled continuously during filtration for analysis in conformance with the discharge permit. Sample collection procedures for the aqueous discharge are outlined in the company's sampling plan. Sludge and Leachate Quality Residues which are not Delisted Treatment residues to which delisting does not apply undergo the applicable testing to verify that the residues meet the regulatory requirements for land disposal. Appendix 2L lists the test methods for analyses for compliance with LDR requirements. Table 2-2 in Appendix 2B lists the treatment standards which must be met or treatment residues which are not delisted.
	Page 14	Sampling Methods

		Sampling Strategies Virtually all wastes accepted by the facility are mixed with other wastes, either during storage or as an inevitable portion of the treatment process. The treatment of one waste by utilizing another is an economic and environmentally sound business practice. All operations occur under roof and within the secondary containment. No surface impoundments are used for storage or treatment of waste. To accommodate this, the company's facility and operating practices are designed to provide safe storage and isolation of otherwise incompatible wastes. All areas where waste storage and mixing occur have been specifically designed to segregate incompatible wastes. Reactions occur only under controlled conditions within treatment and reaction vessels.
• Mixing method • Each batch or load tested • Other (representative sample)	Page 30	In-process Batch Sample Collection Liquid in process batch samples are collected from the liquids processing batching tanks/reactors. Sample container, sampling procedure, sample label requirements are discussed Solids in -process batch samples are collected from the solids processing blender or pit mixing tank. Sample container, sampling equipment, sample label requirements are discussed. Sampling procedure Pit Mix: After solids processing batches from the pit mixing tank are mixed to a uniform appearance, via hydraulic excavator/backhoe bucket, the bucket scoops a sample for the operator to secure a sample. The operator utilizes a wide-blade metal spatula or hoe to transfer the sample into a plastic bucket. Sampling personnel must have the appropriate safety equipment.
	Page 31	Final Treatment Certification Sample Collection Aqueous Phase: Sampling Procedure "The pump samples from the effluent sampling chamber I the sewer discharge line. Teflon tubing is used for the connections. The tubing carries the aqueous discharge sample from the sample chamber to the interval sampler to the sample container. The interval sampler is operated in the flow discharge proportional sampling mode. At 24 hour intervals a representative sample is taken from the sample container, this sample represents a 24-hour composite of the aqueous discharge. Batch samples are collected and analyzed in-process prior to batch discharge. This sample is submitted to the laboratory after being collected and preserved for analysis." Sludge/Solid Phase: Sampling Procedure: "Liquids processing batches are filtered through a frame filter press. Samples are taken from the filter press by using a wide-blade spatula or tongue depressor to scrape the sludge from a filter plate prior to the drop. Repetitive sampling is necessary to fill the sample containers

		completely full with no headspace.
	Page 33	Solids Processing Treatment Certification Sampling Procedure: Solids processing batches made in the blender are sampled immediately prior to discharging the batches from the blender to the transfer container below. An appropriate sampling device such as a wide-blade spatula or hoe is used to scoop the sludge from the blender. Tongue depressors are used to transfer the sample to the sample container. Repetitive sampling is necessary to fill the sample containers completely, with no headspace.
	Page 34	Solids Processing Treatment Certification - Pit Mixing Sampling Procedure: After solids processing batches are mixed to a uniform appearance, using the hydraulic excavator/backhoe bucket, use the bucket to secure a treatment residue sample. Collect a representative sample from the excavator/backhoe, placing it into the plastic sample bucket using the sampling hoe, disposable wooden tongue depressors, or metal spatula.
	Page 40	Sample collection Frequency Incoming Shipment Sample/Truck Sample - Every waste shipment destined for the treatment process when it arrives at the facility. In-Process Batch Sample/Liquids Processing - At the end of the neutralization step of each batch and at the end of the stabilization step of each batch In-Process Batch sample/Solids Processing - at the end of the stabilization step of each batch Final Treatment Certification/Liquids Processing - Aqueous phase - flow proportional composite; Sludge/solid phase - Every batch is sampled as it is filtered. Final Treatment certification/solids processing - sludge/solid phase - Every batch is sampled after the material is mixed in the pit.
	Appendix 2Q	Reagent Safety Data Sheets - Anti-foaming agent, ferric chloride, hydrated lime, iron (ferrous) sulfate, ethyl namate, sodium bisulfite, sodium hypochlorite, sodium sulfide flake, sulfuric acid.
	Appendix 2m	Frequency of sampling - In process batch sample/liquid processing (at the end of the neutralization step of each batch and at the end of the stabilization step of each batch. In process batch sample/solids processing (at the end of the stabilization step of each batch. Final Treatment Certification/Liquids processing (aqueous phase composite sample every 24 hours and sludge/solid phase every batch is sampled as it is filtered. Final Treatment Certification/solids Processing (sludge/solid phase every batch is sampled).
	Appendix 2l	Summary of analytical methods for various waste codes
	Appendix 2c	Waste Analysis and Hazard classification - Typical Range of Hazardous Constituents (%) (maximum shown) As 1%; Cd 10%; Cu 30%; CR 30%; CN 20%; Ni 30%; Pb 30%; Se 1%; Zn 30%.;
	Section2 Page 26 of 41	Representative sampling. Representative samples are defined as samples exhibiting average properties of the whole waste and address the issue of sampling accuracy - the closeness of a

		sample value to its true value. Sufficiently accurate samples will be considered reliable estimates of the chemical properties of the waste. Sampling accuracy will be achieved by composite sampling which entails collecting several random samples which will be combined into a single sample.
	Section 2 30-34 of 41.	In-process Batch Sample Collection. Liquid in-process batch samples are collected from the liquids processing batching tans/reactors. Sample container; Plastic beakers. All reactors have mechanical agitation that ensures homogenous samples (NOTE: Mixing time?) The sample spout valve is opened and material allowed to drain into a pail for five to ten seconds. Sample Label requirements. Solid in-process batch samples are collected from the solids processing blenders or pit mixing tank. Sample container: plastic beakers. Pit mix: After solids processing batches from the pit mixing tanks are mixed to a uniform appearance, via hydraulic excavator/backhoe bucket, the bucket scoops a sample for the operator to secure a sample. The operator utilizes a wide-blade metal spatula or hoe to transfer the sample into a plastic bucket. Final Treatment Certification Sample Collection Liquid Processing Treatment Certification. Aqueous Phase. The effluent from the plant is sampled prior to discharge. Plastic carboy with screw cap. Size of the carboy is sufficient to contain sampling volume over a 24-hour period. Sludge/solid Phase. Solids Processing Treatment Certification. Plastic beaker with a cover for de-characterized waste. Solis processing batches made in the blender are sampled immediately prior to discharging the batches from the blender to other transfer container below. An appropriate sampling device such as a wide-blade spatula or hoe is used to scoop the sludge from the blender. Tongue depressors are used to transfer the sample to the sample container. Repetitive sampling is necessary to fill the sample containers completely, with no headspace. Solids Processing Treatment Certification - Pit Mixing. After solid processing batches are mixed to a uniform appearance, using the hydraulic excavator/backhoe bucket, use the bucket to secure a treatment residue sample. Collect a representative sample from the excavator/backhoe, placing it into the plastic sample bucket using the sampling hoe, disposable wooden tongue depressors, or metal spatula.
	Appendix D	Terms and Definitions. Batch: Environmental samples that are prepared and/or analyzed together with the same process and personnel, using the same lot(s) of reagents. A preparation batch is composed of one to 20 environmental samples of the same quality systems matrix,, meeting the above mentioned criteria and with a maximum time between the start of processing of the first and last sample in the batch to be 24 hours. An analytical batch is composed of prepared environmental samples (extracts, digestates or concentrates) which are analyzed together as a group. An analytical batch can include prepared samples originating from various quality matrices and can exceed 20 samples.

		Sampling. Activity related to obtaining a representative sample of the object of conformity assessment according to a procedure.
Peoria Disposal Company **4349 West Southport Road** **Peoria, IL 61615** **RCRA Part B** **RCRA Log No. B-24-R** **July 2017** **ILD000805812**		
	C-1	Peoria Disposal Company (PDC) manages a broad range of hazardous and non-hazardous wastes at the PDC 1 facility. The following waste streams typically comprise the vast majority of the waste managed at the PDC 1 Waste Stabilization Facility (WSF); --K061 --WW treatment sludges from electroplating Foo6 --Metal-bearing industrial and remediation wastes exhibit metal characteristics AS, Ba, Cd, Cr, Pb, Hg, SE, and Silver Non-hazardous wastes requiring moisturizing prior to offsite disposal --Non-hazardous liquid wastes requiring solidification prior to offsite disposal.
		Each waste stream is analyzed prior to acceptance at the PDC1 facility at and at an interval no greater than once every five years.
	C-2	Generators: At least one representative sample of each hazardous waste stream is analyzed for the applicable treatment standards prior to acceptance at the PDC 1 facility. Additionally, characteristically hazardous wastes are analyzed for the applicable UHCs prior to acceptance at the PDC1 facility. Each waste stream is reanalyzed for the applicable UTS and UHCs at a frequency no less than once every five years. Generators are required to annually recertify that the most recent analytical results remain representative of the waste streams. In order to confirm that no UHC or constituents for which a UTS has been established is exceeded in the treated waste residues, periodic corroborative testing is performed or the applicable UHCs and UTS that are not subject to the treatment verification testing protocol for every batch. The corroborative testing is conducted on waste streams prior to shipment to the PDC 1 facility at the frequency specified I Table C.31-1. The analysis results are compared by Facility Personnel to those furnished during the approval process If there is significant deviation from the initial analysis, the results are discussed with the generator and re-evaluated by the Waste Acceptance Committee for its acceptability at the facility. LDR Corroborative Testing Frequency

		Tons Per Year / No of Tests Per Year 1-1200 — 1 1201-3600 — 2 3601-7200 — 3 >7200 — 4
• Grab sampling (at least 2 grab samples) • Post treatment storage	**C-3**	C.1.3.3 Treatment Facilities Treated waste residues are stored in either 1. Containers, 2. Tanks or, 3. Temporary piles located inside the WSF containment building until sampled and confirmed that the residues are below the UTS and, when applicable, delisting levels. These verification samples are collected at the following frequencies: --Residues treated pursuant to an adjusted standard issued by the Illinois Pollution Control Board are not part of this application and are sampled and analyzed in accordance with the requirements of the individual adjusted standards --Residues from the treatment of all other waste codes. At least two grab samples of every treatment batch (typically one from the first mixer load and one from the last mixer load each day). C.2 Waste Analysis Plan PDC has in place procedures which provide critical information necessary to ensure that wastes received at the PDC1 facility can be properly managed in accordance with PDC's RCRA permit and applicable regulations. These procedures include: --Pre-acceptance waste stream testing and evaluation --gate control fingerprinting and physical observations --Periodic waste stream re-certification and analyses --verification analyses of treated residue prior to shipping offsite for disposal.
	Appendix C-3	Waste Stabilization Facility Compliance with LDRs --WSF cannot accept D009 Hazardous wastes containing greater than or equal to 260 ppm of mercury due to LDR treatment standard --The WSF cannot accept wastes exhibiting concentration above applicable UTS unless the UTS are based on stabilization, or when its treatment using chemical stabilization would constitute impermissible dilution as defined in 35 Ill. Adm code 728.103 (e.g., cyanides, organics, etc) --Prior to disposal the WSF shall have on file the required information demonstrating compliance with all applicable UTS --Treated waste subject to the LDR of 35 Ill. Code 728 shall be managed in accordance with the following procedures: ---The treated waste shall not be placed in a landfill for disposal until it has been demonstrated that the applicable UTS are met by the treated waste. ---Until such time as the analyses necessary to demonstrate compliance with the UTS are completed, the treated waste shall be stored. Waste subject to different UTS may be homogeneously mixed prior to treatment or may be segregated from each other prior to

		treatment and after treatment until it is demonstrated that the wastes have each passed the applicable UTS as specified in Condition 4.e.i. below. ---The container, tank or waste pile may contain waste generated over more than one day of operation ---Once the samples required for the demonstration have been obtained, no new wastes may be added to the container(s) and a new container(s) for the waste of concern must be started ---The demonstration shall be carried out in accordance with the steps listed below: ------A grab sample shall be collected from the first and last container for each waste code treated or waste mixture treated. The demonstration of compliance with the UTS for the mixture of waste codes shall be based on the most stringent UTS ------The samples from the first and last container shall be analyzed separately to demonstrate compliance with the UTS. a minimum of two samples must always be analyzed to demonstrate compliance ------If the treatment standard or any of the constituents is exceeded: ---------Treated waste which fails to meet the requirements shall receive additional treatment (this may consist of additional curing time and/or reintroduction into the WSF for further stabilization). Waste which receive additional treatment may only be disposed in a landfill after it has been demonstrated that the residue meets the proper UTS ---------Wastes which fail to meet the requirements after treatment or additional curing, shall be reintroduced into the WSF for further stabilization. PDC shall conduct an investigation of these wastes to determine the cause of the failure, a plan shall be developed and implemented to prevent and/or minimize future occurrences. At a minimum, for all wastes, unless each container is sampled separately, the treated waste must receive the same amount (or more) of curing time which the sample took to demonstrate compliance with the LDR standard during the bench study of the waste. The above procedures pertain to the compliance demonstration for all wastes that are not treated pursuant to an Adjusted Standard granted by the Illinois Pollution Control Board which Adjusted Standards requirements are separate from this Application.
	Page 4	Resource Guide Glossary (NOTE: If federal definition is cited, make sure that the definition is copied correctly or reference in whole or in part) Debris - the definition of “debris” is found in 40 CFR 268.2(g) and states (NOTE: in part) “Debris means solid material exceeding a 60 mm particle size that is intended or disposal and that is: A manufactured object; or plant or animal matter; or natural geologic material.”
Heritage Environmental Services, LLC IND093219012		

Heritage Environmental Services, LLC IND980503890		
Michigan Disposal Waste Treatment Plant (MDWTP) MID 000724831 A.2 Chemical and Physical Waste Analysis Plan 2017 Attachment Revisions Replaces Previous Attachment A.2 Chemical and Physical Properties, and A.3 Waste Analysis Plan		
	1	This license application addresses requirements for chemical and physical WAPS at the hazardous waste management facility for the Michigan Disposal Waste Treatment Plant and Wayne Disposal in Belleville, Michigan. The information included demonstrates how the facility meets the chemical and physical analyses requirements for HA management facilities. All activities associated with the WAP will be conducted at the MDWTP and WDI, Belleville facility unless otherwise specified. (NOTE: The applicants both generates and accepts hazardous waste. Types of units include containers, tanks and landfilled waste.)
	5	Hazardous debris accepted at the facility will be treated using one of the technologies identified in table 1 of 40 CFR 268.45. Debris as defined in 40 CFR 260.10 may be treated at MDWTP prior to land disposal at WDI or an alternate subtitle C landfill utilizing the immobilization technologies defined in 268.45 in order to meet the alternative treatment standards for hazardous debris provided in 40 CFR part 268.45.
	11	A2.A.4 Pre-Approval LDR Evaluation. Onsite and offsite generated waste streams are reviewed by qualified personnel for concurrence with LDR applicability and prohibition of disposal. The determination is based on information provided by the generator as required by 40 CFR 268.7(a)(1). Generator process knowledge, analysis, and/or information provided on the waste characterization form will be used to determine whether characteristic waste along with UHCs reasonably expected to be present above their concentration-based levels (See Table UTS in 268.48) at the point of generation, meet the applicable land disposal restrictions. In accordance with R 299.9627 and 40 CFR 268.41, where treatment standards are based on concentrations in the waste extract, the TCLP will be used, if required in accordance with Method 1311, to determine if waste meet treatment standards. Constituents exceeding applicable LDRs will be treated on-site by acceptable treatment methods or sent off-site to a facility that can appropriately treat the waste. A2.A.4(a) Dilution and Aggregation of Wastes (R 2999627 and 40 CFR 268.3) Listed wastes, if destined for land disposal, may not be diluted from the point of generation to

		the point of land disposal. Characteristic wastes may only be diluted if the waste has a concentration-based treatment standard or is treated using the DEACT technology-based treatment standard, and the waste is not a D003 reactive waste. Knowledge of dilution will result in MDWTP and WDI managing the waste as prohibited from land disposal and proper treatment will occur. A2.A.5 Pre-Approval Generator Waste Characterization Discrepancies. Waste streams are reviewed with respect to the waste characterization requirement and the LDR requirements in 40 CFR Part 268. Waste generator or individuals with the authority to make characterization and LDR decisions must certify information provided is representative, true and accurate. The analytical data, waste type, process description, waste chemical and physical characteristics provide the facility with sufficient information to decide if the waste can be accepted or if additional data is required before a decision can be reached. If the generator does not provide sufficient information, the generator or their representative is contacted and requested to provide further information before the approval process will continue. The profile, with the supporting information as required, forms the basis of information upon which the facility determines if the waste can receive an approval for disposal at WDI or storage, transshipment and treatment at MDWTP. When it is determined that a waste stream can be safely handled at the facility in accordance with the operating license requirements, it is assigned a unique identification number. An approval letter is sent to the generator directly or via the customer, serving as notification that the waste as represented may be shipped to the facility, and that the facility has the appropriate permits to accept the wastes. All approval files are maintained in the facility operating record in an electronic, paper or other archival form. Approval files with no shipment received upon annual review will not be kept in the facility operating record.
	14	A2.B.1(b) Sampling Methods and Frequency. The sampling methods that will be used to obtain a representative sample of the waste to be evaluated and the sampling equipment and rationale are summarized in Table A2.B.1. (3rd paragraph) Bulk containers (i.e., roll-offs, end dumps, etc) are sampled upon arrival at the facility and are placed in permitted storage or directly into permitted treatment tanks. Except as exempted below, grab sample will be taken from 100% of the manifested bulk containers from each unique approval number on a given manifest
• Reagents	**21**	A2.D Post Treatment and Land Disposal Restriction. As stated in the 1997 preamble, the ultimate objective of the LDR program is to ensure all hazardous waste to be land disposed is treated in a way that minimizes the threats that land disposal could pose. MDWTP treats wastes that require treatment to comply with the LDRs using well-designed treatment methods such as stabilization, immobilization, neutralization, deactivation, oxidation, and/or reduction using such treatment reagents as inorganic binders (e.g., cement, fly ash, kiln dust)

		organic binders (e.g., activated carbon), ferrous sulfate, ferric chloride, sodium sulfide, acids, bases, oxidizers, and/or reducing agents. Treatment reagents may be commercially available materials, other untreated waste (e.g., an acid waste used to treat a base waste and vice versa), and/or treated waste (e.g., a stabilized waste meeting LDRs used to absorb free liquids in a non-hazardous waste whose only required treatment is solidification to pass the paint filter test). Treatment of applicable waste codes and UHCs reasonably anticipated to be present at the point of generation as identified by the generator during the pre-approval process occurs in accordance with Attachment C4. Constituents that do not qualify as UHCs in the original waste, but are concentrated to above UTS levels during treatment are not required to meet UTS levels in the treatment residual. If after treatment a hazardous waste displays a characteristic for the first time, the characteristic waste code will be added to facility records. Wastes will be retreated, as appropriate, to meet the applicable characteristic treatment standard or an alternative treatment standard prior to land disposal (Federal Register 64:90, May 11, 1999. A2.D.2 Land Disposal Restrictions. In accordance 40 CFR 268.40, prohibited waste identified in the table "Treatment Standards for Hazardous Wastes" may be land disposed at WDI or another authorized landfill only if it meets the requirements found in the table. Hazardous constituents in waste or in treatment residual will be disposed of only if the following applicable conditions are met: • All hazardous constituents in the waste or in the treatment residue must be at or below the values found in the table for the waste; or • The hazardous constituents in the extract of the waste or in the extract of the treatment residue must be at or below the values found in the table. • The waste must be treated using the technology specified in the table which are described in detail in 40 CFR 268.42. Applicable alternative treatment standard specified in 40 CFR 268.44-49 may be applied to waste or treatment residual. When wastes with differing treatment standards for a constituent of concern are combined for purposed of treatment, the treatment residue will meet the lowest treatment standard for the constituent of concern. (NOTE: with UTS isn't this out-of-date?)
	22	A2.D.2(a) Characteristic Wastes. Characteristic waste codes acceptable for storage, treatment and disposal are outlined in Appendix A. Waste codes will be treated to treatment standards identified in 40 CFR 268.40. In addition to the waste codes, UHCs reasonably anticipated to be present at the point of generation will be treated to UTS found in 40 CFR 268.48. Upon treatment and the appropriate demonstration that the waste has met applicable LDRs or has been appropriately decharacterized waste will be landfilled.

	23	A2.D.2(c) Contaminated Debris. Hazardous debris that exhibits the characteristics of ignitability, corrosivity, or reactivity will be treated using one of the extraction, destruction, or immobilization technologies identified in Table 1 of 40 CFR 268.45. MDWTP does not knowingly accept hazardous debris deliberatively mixed with non-debris hazardous waste in order to change the treatment classification. MDWTP treats hazardous debris in accordance to immobilization technologies specified in 40 CFR 268.45, where there are no contaminant restrictions for the immobilization technologies nor are there limitation on the type of debris that that may be teated by the immobilization technologies. When macroencapsulation or sealing is the applied immobilization technology, treatment may be performed in the MDWTP tanks or any of the container storage areas. A2.D.2 (f) Waste Mixtures and Wastes with Overlapping Requirements. Wastes that carry more than one characteristic will be identified with a number for each characteristic and treated for each of the constituent of concern. The presence of a listed code or use of a treatment method or standard requiring subtitle C disposal will result in disposal at WDI or an alternative subtitle C landfill. If immobilization is used in a treatment train, it will be the last treatment technology applied. Hazardous debris will be treated for each contaminant subject to treatment as specified by 40 CFR 268.45(b) for toxicity characteristic debris and debris contaminated with listed wastes. A2.D.2(g) Dilution and Aggregation of Wastes Listed wastes, if destined for land disposal, may not be diluted in order to meet LDRs from the point of generation to the point of land disposal. Characteristic wastes may only be diluted if (1) the waste is managed in a CWA/CWA-equivalent surface unit or a Class I safe Drinking Water Act injection well (2) the waste has c concentration-based treatment standard or is treated using the DEACT technology-based treatment standard, and (3) the waste is not a D003 reactive waste. The facility does not dilute or partially treat a listed waste to change its treatability category (i.e., from nonwastewater to wastewater) in order to comply with different treatment standards. MDWTP may combine different wastes for like treatment (e.g., D007 waste may be combined with a D008 waste for stabilization). If the wastes are all amenable to the same type of treatment to be performed, the facility may combine wastes to perform the acceptable treatment
• Single grab (random)	24	A2.D.3 Post-Treatment Sampling and Analysis (MDWTP). In accordance with the LDR regulations, wastes with concentration-based treatment standards must be evaluated to

		determine if applicable constituent concentration levels have been attained. This can be accomplished by either (1) testing the waste or (2) using knowledge (such as information provided on the waste characterization forms, knowledge of the process or materials used to produce the waste, or knowledge of an effective treatment recipe) when appropriate, to determine whether the treated waste meets the applicable LDR treatment standards or alternative treatment standards. Treated waste will be sampled from the MDWTP treatment tanks in order to verify that the waste meets the applicable LDR numeric-concentrations prior to land disposal. Consistent with 40 CFR 268.40(b), compliance with LDR numeric-concentrations based treatment standards for NWW is determined using one grab sample (a one-time sample taken from any part of the waste) collected from a random vertical and horizontal location using an excavator to reach the selected sampling point, collecting the sample from the excavator bucket with a disposable scoop or cup. Using grab sampling to measure compliance with the treatment standards ensures conformity with LDR program goals such that all of the hazardous waste to be land disposed is treated to minimize the threats to human health and the environment (62 FR 26041, 26047, May 12, 1997). In addition, grab samples normally reflect maximum process variability, and thus reasonably characterize the range of treatment system performance (54 FR 26594, 26605, June 23, 1989). EPA established treatment standards for prohibited wastes based on grab sampling. The universal treatment standard for non-wastewaters are consequently enforced on the basis of grab sampling, and in turn is how MDWTP confirms treatment standards have been met. The sample is then taken to the laboratory for analysis. Table A2.D.2 outlines the test methods that will be utilized to verify LDR. Limits of quantitation are set below treatment standards of the specific compound being analyzed in order to quantify concentrations in order to demonstrate concentration are below UTS levels. Treatment batch residues, resulting from the treatment operations that exceed the applicable LDRs, are re-evaluated. Options include re-testing after additional cure time, retreating on-site until the LDRs are achieved or sending the batch off-site for further treatment to meet the LDRs.
	26	A.3.E.4 Waste Shipped to Subtitle D Facilities. If the facility may ship nonhazardous and decharacterized waste to a subtitle D facility, the facility will submit a one-time notification and certification for characteristic wastes, or listed wastes that are listed only because they exhibit a characteristic, that have been treated to remove the hazardous characteristic and are no longer considered hazardous. The facility will place a certification and all treatment records in the facility's file. The notification and certification will be updated if the process or operation generating the waste changes and/or if the subtitle D facility receiving the waste changes.

Wayne Disposal Inc (WDI) and Michigan Disposal Waste Treatment Plant (MDWTP) 49350 - North 1-94 Service Drive Belleville, Michigan 48111 USEPA ID MID048090633 USEPA ID MID 000724831 (MDWTP) WAP 2013-10 Remove East Pugmill.doc		
	Page 5	(NOTE: Can two facilities share a WAP?)
	Page 8	MDWTP. The MDWTP is a liquid and solid hazardous waste storage and treatment facility. Containerized wastes may be staged/stored on-site before and after treatment in one of the following areas: east container staging area, north container storage area, east and west loading/unloading bays, southeast container storage area. Wastes are placed directly into the waste treatment tanks, and mixed, with modifers for deactivation, neutralization, chemical oxidation, and chemical reduction or stabilization reagents, as required for the specific wastes being treated. The facility currently uses a backhoe shear attachment to size solid containers, Prior to being sized over and into a treatment tanks, the containers are staged on the paved floor in front of the treatment tanks.
• Reagents • Mixing Method	Page 8	Liquid hazardous wastes to be treated in the pozzolanic stabilization process may be stored in four 20,000 gallon, vertical storage tanks or placed directly into treatment tanks. Liquid reagents are stored in two 20,000 gallon vertical tanks. Dry flowable bulk solid hazardous wastes may be stored in three 100 cubic yard silos. Lime kiln flue dust, cement kiln flue dust, lime and fly ash are also used for stabilization and may be stored in all six silos. The dusts are conveyed to a treatment tank at a controlled rate to effect treatment of liquid and so/id wastes. Other reagents such as ferrous sulfate may be added directly to the tanks in bag, container, or bulk quantities. Hazardous waste and non-hazardous waste are stored and treated in treatment tanks and Pugmill 14. Treatment consists of blending the wastes and treatment reagents in the storage/treatment tanks.
	Page 10	For the purposes of compliance with 40 CFR Part 268 or if the waste is not listed in Subpart D of 40 CFR 261 per 262.11, the generators must determine whether their waste is identified in subpart C of 40 CFR part 261 by either: --Testing the waste according to the methods set forth in Subpart C or according to an equivalent method approved by the Director of the MDEQ or Applying knowledge of the hazard characteristic in light of the materials or processes used
	Page 23	

		3.7 Waste Treatment Technologies - MDTP Chemical Stabilization (MDWTP). The facility treats wastes that require treatment to comply with the LDRs through chemical stabilization using a pozzolonic-type process incorporating CKD, lime, and other select reagents. Certain wastes may require more than one type of treatment, including neutralization, deactivation, chemical oxidation, and/or chemical reduction using reagents such as lime, oxidizing or reducing agents, to convert selected waste constituents into a physical or chemical form that is less soluble. Less hazardous and/or more suitable for subsequent stabilization. Chemical oxidation. Hazardous wastes containing organic constituents above LDRs are chemically oxidized at the facility. The chemical oxidation process is described below and detailed in figure 2. Chemical oxidation is also discussed as one of the BDAT for managing organic contaminated wastes in 40 CFR 268.42 and Appendix VI. Oxidation is the process in which an atom or compound acquires electrons and reduction is the process in which an atom or compound loses electrons. The two processes always occur simultaneously with one compound acting as the oxidant and the other the reductant. For the treatment of hazardous organic containing waste, the facility typically uses a sodium hypochlorite solution as the oxidizing agent. While sodium hypochlorite is the predominant oxidant used, the facility may occasionally use other oxidizing agents, including but not limited to hydrogen peroxide and potassium permanganate. In the oxidation process, electrons are stripped from the organic molecules to the extent that the carbon to carbon bonds are broken and carbon dioxide, sodium chloride and water are formed. Organic compounds are destroyed in the mildly exothermic reaction.
• Every batch or load tested	Page 24	3.7.3 Treatability Studies. The pre-approval analyses for specific wastes to be treated to meet the applicable LDRs are specified in Table 3 and Section 4 - Waste Analysis Parameters. A bench-scale treatability study is performed to verify acceptability with the facility treatment process and the treatment “recipe” required to meet the applicable treatment standards. The treated waste sample are analyzed as specified in Tables 2 an3 3 and Section4. These pre-approval treatability studies are used to adjust the treatment processes for specific waste types and batches These treatment operations may combine several wastes or shipments from varius generators to facilitate operational efficiency and utilization of available processing capacity. Batch treatment of multiple wastes and/or shipments will be based on chemical compatibility, hazardous waste numbers and treatment requirements. Post-treatment analyses, includes the TCLP and where applicable, specific constituent analyses are performed on each batch of hazardous waste prior to landfill disposal. This post-

		treatment analysis is used to demonstrate that the treatment residue meets the LDRs. The facility conducts treatability testing to ensure that wastes can be treated to the required LDR levels prior to acceptance of the wastes. The treatability test involves simply mixing waste and treatment reagents in a ratio developed by the laboratory. Measured volumes of the waste are mixed with the treatment agents, Mixing is designed to emulate mixing time per unit of waste in the treatment tanks. After mixing, a sample of the waste is collected for analysis for the constituents of concern. A treatability report is then prepared showing the after treatment concentrations of the COC. The report is placed into the waste stream technical approval file prior to acceptance of the wastes. To successfully treat certain waste streams, a modification of the standard process may be required. Modified treatment is first verified in the laboratory and then implemented at the plant once the waste is received. Modified treatment is considered CBI. It is important to note that all treatment is verified through actual post treatment analysis of treatment residue, prior to disposal of the waste.
	Page 26	3.7.4 Mixing, Blending, and Commingling of wastes for Treatment. As part of the treatment and storage process, various individual waste streams are mixed, blended, and/or commingled. The blending operations are conducted by the facility operations personnel under the direction and careful supervision of the facility's laboratory and treatment chemists.
• Post treatment storage	Page 26	1.7 Land Disposal Restrictions (LDRs) The facility stabilization process will also be utilized to treat wastes not subject to the LDRs, to solidfy free liquids and render the waste more suitable for handling and landfill disposal. The post-treatment analyses will include a visual observation, to ensure no free liquid is present. A paint filter test may be performed on selected loads when determined necessary by visual inspection. 3.8.2 Wastes Meeting the LDRs. Wastes that are certified, through analysis, to meet the LDRs may be directly landfilled at WDI or another off-site TSDF. The LDR certification and notification and analytical documentation will be provided for each waste stream disposed of at WDI or shipped to another TSDF. Wastes Requiring Treatment and LDRs - MDWTP Wastes requiring deactivation, chemical oxidation, chemical reduction, and/or stabilization

		at the facility will be treated in batch operation. Each batch may contain multiple EPA hazardous waste numbers and treatment standards. The treated batches will be held in the treatment/storage tanks or in roll-off boxes or trailers while testing is performed prior to disposal. Treatment batch residues will be sampled and analyzed to determine whether the batch meets the applicable treatment standards. Treatment batch residues, resulting from the treatment operations that exceed the applicable LDRs will be reevaluated. Options included re-testing after additional cure time, retreating on-site until the LDRs are achieved or sent off-site for further treatment to meet the LDRs. Any off-site shipments will be accompanied by the LDR notification, a manifest, and data for the waste for the off-site TSDF in accordance with 268.7(a)(1) Characteristic Wastes and LDRs Characteristic wastes, which are batch-treated separately from listed wastes, may be disposed of in a solid waste/subtitle D landfill, if it is determined that the LDRs have been achieved and the treatment residue no longer exhibits the characteristics of hazardous waste and all applicable UHCs have been treated in accordance with the UTS. Hazardous Debris and LDRs As stated in 268.45, hazardous debris (>60mm) must be treated prior toland disposal, unless the debris is no longer contaminated with hazardous waste or the debris is treated to the waste-specific treatment standard in 268.45 using technologies identified in Table 1 of 268.45. MDWTP uses the micro- and macro- encapsulation immobilization technologies to achieve the performance standards of reduced leachability of the hazardous contaminants.
	Page 29	3.9.1 Description of the macroencapsulation Unit. The macroencapsulation unit is made of approximately one inch thick polyethylene using an injection molding process to create a rigid, one-piece “tub” that fits within a roll-off or is self-supporting. The macroencapsulation units can be manufactured in any size but are most commonly manufactured to fit within a 20-yard roll-off. To seal the unit a sheet of the same polyethylene in approximately the same thickness is screwed onto the lip of the tub using approximately 120 self-tapping screws. Screwing the down the lid provides a watertight seal that may be augmented with caulking or glue. Debris placed within the macroencapsulation units are jacketed within the polyethylene in an inert, durable, watertight material that will substantially reduce surface exposure to potential leaching media. The inert polyethylene material will completely encapsulate the debris and is resistant to degradation by the debris and debris contaminants managed by MDWTP and the wastes, leachate, or microbes with which it will contact once landfilled in a licensed hazardous waste cell.
	Page 30	Description of the Macroencapsulation Process.

		Debris will be placed into one of the treatment tanks or directly into a macroencapsulation unit. In the treatment tank, the debris is mixed, as needed with an inert finely divided material to fill the void spaces when encapsulated and to provide cushioning material. The inert filler includes cement kiln dust, sand, solidified non-hazardous waste, waste treated to the LDRs or other non-biodegradable sorbent or fixation media. Fill material is also added directly to the macroencapsulation units. The debris is lifted from the tank with a backhoe and placed into a macroencapsulation unit or is placed directly into the unit. As with dump trailers and dump trucks currently loaded with treated wastes within MDWTP, the macroencapsulation units are also loaded within the MDWTP. The lid is screwed into place on the macroencapsulation unit.
	Page 30	Macroencapsulation approvals will specify special burial" in the licensed hazardous waste cell. The special burial designation will ensure that the macroencapsulation units are carefully placed in the cell to ensure that they are not ruptured during placement or after placement. For macroencapsulated debris shipped to another permitted TSDF, guidance will be provided, to extent needed, so that the macroencapsulation unit can be unloaded without rupturing.
• Single grab (random)	Page 41	Treatment/Storage Tanks - MDWTP. Treated, stabilized waste will be sampled from the MDWTP treatment tanks in order to verify that the waste meets the LDRs prior to land disposal with the exception of microencapsulated and macroencapsulated debris. Samples of treated, stabilized waste will be collected from random vertical and horizontal locations. A grab sample will be collected from a random vertical and horizontal location using a backhoe to reach the selected sampling point, collecting the sample from the backhoe bucket with a disposable scoop or cup. The sample is then taken to the laboratory for analysis. The location from which the random grab sample is taken will be marked in a grid in the Batch packet. (NOTE: If sample fails do they retest on that same sample or on a new one?)
	Page 51	Table identifies stabilization as an appropriate treatment for "Low total organic content" (NOTE: What does "low organic content mean?" What does high organic content mean?)
US Ecology Detroit North MID074259565		
Drug and Laboratory Disposal, Inc. 331 Broad Street Plainwell, MI 49080		

MID 092 947 928		
	Page 5	Drug and Laboratory Disposal, Inc. is a commercial facility that receives wastes generated off-site. DLD has developed a WAP to ensure that its facility will accept only wastes that it is authorized to accept. The hazardous wastes stored at DLD will be properly characterized prior to waste acceptance. All generators will be required to provide a complete waste characterization, including chemical analysis when appropriate.
	Page 20	A3.A.3 Procedures to ensure compliance with LDR Requirements. All shipments of wastes subject to LDR received at DLD will be accompanied by appropriate generator notification and LDR notification in accordance with R 299.9627 and 40 CFR 268.7. The LDR notification accompanying generator wastes will be reviewed, and any discrepancies in the LDR notification and the associated manifest, analytical records, or the waste profile will require shipment rejection unless additional, satisfactory, clarifying information is provided by the generator. All information obtained to document LDR compliance will be maintained in the facility operating record until closure of the facility.
	Page 21	A3.A3 Characteristic wastes. Characteristic D008 lead NWW and D004 arsenic NWW may be analyzed using TCLP to determine compliance with treatment standards of 40 CFR Part 268.
	Page 30	A3.B.3 Procedures to Ensure Compliance with LDRs Requirements. In accordance with the LDR regulations, all wastes shipped off-site will be analyzed to determine whether the waste meets the applicable LDR treatment standards specified in R 299.9627 and 40 CFR 268.41-43. All analytical results will be maintained in the operating record of DLD Inc. until closure of the facility. Wastes that are determined through analysis to meet treatment standards may be landfilled. DLD will supply LDR notifications and certification, including appropriate analytical records or documentation of generator knowledge to support the certification, to the receiving facility with each shipment of waste.
US Ecology South MID980991566		
Dynergy/Dynecol, Michigan WAP Revision 5 (12/10/03)		
• Other Type of Testing Frequency (periodic basis)	Page C-18-21	C-4: Land Disposal Restrictions (40 CFR 268) C-4a Restricted Wastes Treated at the Waste Treatment Facility All restricted waste streams which are treated at or generated by Dynecol and are subject to LDRs will be handled in accordance with the provisions of 40 CFR 268. C-4a(i) Applicable Treatment Standards

		The effluents from the treatment of regulated wastes are not subject to LDRs because the treated effluent is discharge to the Detroit WWT plant in accordance with the domestic sewage exclusion of 40 CFR 261.4 The sludges generated from the treatment of regulated wastes may be subject to LDRs. The treatment standards from these wastes are defined in subpart D of 40 CFR 268. The disposal of these sludges will be in accordance with all provisions of 40 CFR 268. C-4(a)(ii) Waste Analysis Requirements The F006 and F019 sludges are analyzed on a periodic basis to determine if they meet the treatment standards as defined in 40 CFR Part 268, or are sent to an alternated disposal facility for further treatment prior to land disposal. No treatment standards have been established for the newly listed waste K157at the time submittal of this permit reapplication package. Sludges from treatment of Other Listed Hazardous Wastes (see Table C.2 Part B) are subject to all land ban restrictions as defined in 40 CFR 268, and will be analyzed periodically to determine if they meet the treatment standards as defined in 40 CFR 268, or are sent to an alternate disposal facility for further treatment prior to land disposal. C-4 (a)(iii) Certification Requirements Certifications for all restricted wastes treated or generated by Dynecol will be done in accordance with requirements and restrictions of 40 CFR 268 and Michigan Act 64 R 299.9311 C-4(a)(iv) Storage Requirements The influent wastes and treatment residuals are stored solely for the purpose of the accumulation of such quantities of hazardous wastes as necessary to facilitate proper treatment and/or disposal. These wastes are not stored for more than one year. Treatment residuals are typically disposed of in less than 90 days. C-2d Frequency of Analyses (40 CFR 264.13(b)(4)). Dewatered solids from the treatment of certain characteristically hazardous solutions and K062 wastes are analyzed for TC toxicity metals on a periodic basis to confirm that the treatment process (lime stabilization and others) generates a non-hazardous filtercake. Dewatered solids are also tested for those TC organics received during the period for which the solid is applicable. Waste pickle liquor sludge generated by lime stabilization of spent pickle liquor from the iron and steel industry (SIC codes 331 and 332) is exempt from the definition of a hazardous waste per 40 CFR 261.3©(2)(ii)(a) and may be disposed of as a non-hazardous waste, unless it is characteristically hazardous.

		Dewatered solids from the treatment of F006, F019, K157, K140, U408, K169, K170, K171 and K172 wastes are tested on a periodic basis to determine if the sludge meets the appropriate treatment standards. Or are sent to an alternate disposal facility for further treatment prior to land disposal. Dewatered solids from the treatment of Other Listed HW referenced in Table C.2, Part B will be subject to all land ban restrictions as defined in 40 CFR 268. The solids will be evaluated periodically to determine if they meet the treatment standards for the treated wastes, or are sent to an alternate disposal facility for further treatment prior to land disposal. NOTE: C-23 has a table of Random numbers.
Siemens Industry, Inc MND98109878		
Envirosafe Services of Ohio, Inc Envirosafe Part B Permit Application Date: June 30, 2015 Modification No: 000 OHD045243706		
	C-6	Generator Waste Analysis: ESOI requires the generator to characterize each waste for chemical and physical parameters of that waste, taking into consideration the generation process with its possible hazardous constituents. In lieu of "Generator Knowledge", the generator must test for those parameters that may affect the manner in which the waste will need to be handled and processed. The generator must perform the tests using standardized sampling procedures and standard test methods in accordance with the procedures and methods specified in OAC Rule 3745-51, Appendices I, II, and III; 40 CFR 261, Appendices I, II, and III or equivalent methods and procedures.
	C-8	Specific land disposal restrictions in 40 CFR 268 apply to certain listed EPA HW numbers containing cyanide and these specific numerical treatment standards are required to be met at the time the waste is placed for land disposal. Sulfide-containing hazardous waste must meet the standard of deactivation ("DEACT") at the time the waste is placed for land disposal. Non-wastewater sulfide-bearing waste materials can be treated by the stabilization-solidification process. See also Section C-3e(3) for treatment by other processes resulting in Deactivation of cyanide or sulfide-bearing wastes.

	C-13	ESOI practices operational control of dusty wastes within the landfill by ensuring that the working face of the landfill is covered with a mixture of treated (i.e., stabilized) waste materials that cure to a cement-like consistency that effectively reduce visible emissions to a low level.
	C-22	C-2 Waste Analysis Plan (OAC Rule 3745-50-44(a)(3), 3745-54-13, and 40 CFR 270.14(b)(3) and 264.13).
	C-63	See Ohio Appendix C.14 in volume CBI, the confidential volume for the following Sections: --Sampling Microencapsulation in containers --Sampling Macroencapsulation in containers --Sampling Microencapsulation in bulk
	C-87	C-2f(24) Toxicity Characteristic Leaching Procedure Applicability: Solids, Sludges and Liquids Rationale: This procedure is used to make regulatory determination of a waste's characteristics under 40 CFR 262.11/OAC 3745-52-11 and to determine if any single grab samples meets the LDR treatment standards specified in 40 CFR 268/OAC 3745-270. This test can be used electively to perform offline fingerprint analysis of standard RCRA metals; the use of this test procedure requires extensive preparation and it is not generally amendable for use while incoming shipments are waiting for acceptance. Rejection Criteria: Waste shipments are rejected on the basis of this test. Waste that fails to meet the required LDR treatment standard, based on its EPA HW Number may be retreated, sent off-site for treatment at a different facility or rejected.
	C-90	C-2f(28) Testing of Encapsulation. See volume CBI, for the Confidential Information pertaining to this Section.
	C-102	Table C-5 TSD Processes for General Waste Types Liquid waste - Chemical Oxidation or reduction, chemical precipitation, deactivation, filtration, sedimentation, activated carbon. Bulky, physically-stable solid waste - landfill Containerized waste - container storage (See also liquid waste) - Sludge stabilization - Physical stabilization Monitoring schemes of each of these treatment process will be outlined in each respective section. These monitoring schemes can be utilized for each waste stream treated with the reservation that, if it is determined by the regulatory agency that additional tests should be run for a particular waste stream, these tests will be part of the conditional acceptance for the particular waste material. Table C-5a presents the tolerance limits for each treatment process. The Typical monitoring schemes described in the subsections that follow are used to ensure that wastes to be treated by a particular process fall within the specified limits.
	C-104	Table C-5a Process Tolerance Limit

		Process Unit Limits Deactivation. Solid waste streams must be capable of being adjusted to a pH (10% slurry) of 6 to 9 (optimum for mixed metals stabilization) and 5 to 12.5 (optimum for landfilling). Liquid waste streams must be capable of being treated by stabilization-solidification so that the Corrosivity Characteristic is Deactivated which can be demonstrated either by the pH (10% slurry) of the non-liquid treated waste exhibiting a pH greater than 2.0 but less than 12.5 or the physical state of the treated waste being a non-liquid by visual inspection/paint filter test. Stabilization. Process must be shown to be capable of meeting a required LDR treatment standard. C-3a Physical Stabilization Many materials require stabilization to make them amenable to landfill disposal. RCRA regulations state that no materials with free liquid are permitted to be landfilled. Even when materials contain no free liquid, some materials require further physical stabilization to make them amenable to normal landfill operation procedures. Waste may need to be treated for their lack of physical stability to make them suitable for landfilling. The general testing scheme for physical stabilization is shown in figure C-9. ESOI can use three tests to determine the need for additional physical stabilization of wastes that contain free liquids or exhibit inadequate load-bearing strength. Two tests have been set forth by the USEPA. A third test used by ESOI, the Pocket Penetrometer, is a proprietary method that is used only to enforce a contractual agreement between ESOI and the generator when the facility's requirement that the generator ship waste with a minimum load-bearing strength is appropriate. Shear strength testing of landfilled waste materials is performed in accordance with Permit condition J.2.(s). Refer to Ohio Appendix C.9. The elective Pocket Penetrometer Test can be used to rapidly evaluate load-bearing strength in the laboratory. The Pentrometer test can be used to determine if a generator's untreated waste has sufficient load-bearing strength to withstand being placed in the landfill by tracked heavy equipment without exhibiting excessive deformation. For bulk treated (stabilized) waste materials that are cured after disposal in the landfill, generally the product of a combination of physical-chemical stabilization, the (USC) Unconfined Compressive Strength Test (ATSM D2166-00) is used to evaluate in situ shear strength.(NOTE: There may be an issue that wastes may not have met treatment standards before placement in landfill). Cured, stabilization wastes and wastes mixed and commingled with stabilized wastes as they are disposed in the landfill must be shown to have a shear strength of 2000 psf or greater. For non-homogeneous, non-cohesive waste materials such as soils, untreated waste materials or wastes containing particle size discontinuities and/or debris, ESOI may conduct an ASTM D 3080-04 direct shear test. The DST procedure may also

		be conducted on mixtures or cohesive materials fragmentized during the UCS sampling or testing process as a source of sample material. Refer to Ohio appendix C.9 for test method procedures.
	C-107	C-3b Chemical Stabilization Certain wastes, although physically stable and containing no free liquid, are not suitable in their present physical state for direct landfill disposal. These wastes normally contain metal contaminants which are in a highly soluble physical state. These wastes must be treated in a manner which stabilized those constituents of concern and lowers the leachability of the waste to acceptable levels. These wastes are treated with a treatment reagent mixture that is tailored to the specific waste in such a fashion that the COC are chemically stabilized. Testing of the finished product is performed by various ASTM and proprietary methods as well as the RCRA TCLP test. Waste materials containing free liquid can be stabilized to meet metallic leachability requirements as well as the physical stability requirements for landfilling at the same time. The general testing scheme for chemical stabilization is shown in Figure C-10. The testing protocol for chemically stabilized waste is centered on three specific areas: pre-testing prior to acceptance, process mixture control, and final set (cure time) verification. Prior to acceptance of a specific waste material, the Ohio EPA and ESOI technical staff have the opportunity to discuss the proposed chemical stabilization during the WPR process described in Section C, Figure C-1. Pre-acceptance testing of wastes can be performed at the ESOI Quality Control Laboratory prior to waste acceptance. After reviewing the WPQ form, the technical staff can determine the approximate mix of reagents with the particular waste to ensure that the COC are effectively stabilized. A series of waste and ingredient mixtures can be made utilizing bench scale procedures. Various cure rates can be employed to simulate the treatment process. At various cure times, samples can be taken and the waste mixture can be extracted in accordance with standard TCLP testing. The resulting extract solution can be tested directly for the COC. Process control can be performed in three ways. The first is control of raw materials to be used in the chemical stabilization process. Particle size can be determined for both the lime containing raw materials and for the ingredients (Pozzolans may be used) of choice. Particle size regulated the mixing rate and detention time of the process. Next, when pozzolans are used, determination of the active pozzolans in the raw pozzolan product can be performed. This can be followed by the determination of the available calcium in the lime-containing raw material. After mixing of the waste and the ingredients, samples of the mixture can be taken

		and the following tests can be performed on an as-needed basis; --Paint Filter Test (Method 9095, Update II to SW-846) --X-ray Fluorescence Analysis (Metals Concentration Range Check) --Free Lime test These results can be compared to those of the pre-acceptance waste mixture results and determination of process operation can be made. Corrections in the on-going treatment process can be made by the laboratory. These results can be compared to those of the pre-acceptance waste mixture results and determination of process operation can be made. Corrections in the on-going treatment process can be made by the laboratory. Waste placement and landfill stability testing is performed in accordance with Permit condition J.2(s). Elective testing of the compressive strength or shear strength of the landfill working face can be performed as needed utilizing appropriate engineering methods. Specific test methods used will include, but may not be limited to: --Unconfined compressive strength --Field vane shear test --Direct shear strength test These elective tests can be used to spot check the stability and performance of the landfill at specific locations. ESOI will generally rely on tests performed in accordance with Permit condition J.2(s) to ensure long-term landfill stability.
	C-111	<u>ESOI Stabilization Activities Plan</u> <u>Definition of Stabilization</u> The following is included within the definition of stabilization in the Handbook for Stabilization/Solidification of Hazardous Waste: “the terms stabilization and solidification are used in this handbook as defined in the EPA publication, Guide to the Disposal of Chemically Stabilized and Solidified Waste (Malone et al, 1980) and Technical Resource Document Solidification/Stabilization and its application to Waste Materials (EPA/530/R-93/012, June 1993). The terms “solidification” and “stabilization” contribute to contaminant immobilization. The goal of S/S is to: --Reduce contaminant/pollutant mobility or solubility --Improve the handling and physical characteristics of the waste by producing a solid with no free liquid; --Decrease the exposed surface area across which transfer or loss of contaminants may occur. “Solidification” refers to a process in which materials are added to the waste to produce a solid. This may or may not involve a chemical bonding between the toxic contaminant and the additive. Solidification refers to a process in which materials are added to the waste to produce a solid.

		This may or may not involve a chemical bonding between the toxic contaminant and the additive.
	C-112	Stabilization refers to converting a waste to a more chemically stable form. This conversion may include solidification, but it almost always includes use of a physiochemical reaction to transform the contaminant to a less mobile or less toxic form. Stabilization techniques are generally those whose beneficial action is primarily through limiting the solubility or mobility of the contaminants with or without change or improvement in the physical characteristics of the waste. Examples include the addition of lime or sulfide to a metal hydroxide waste to ppt metal ions or the addition of an absorbent to an organic waste. Stabilization usually involves adding materials which ensure that the hazardous constituents are maintained in their least mobile or toxic form. Both solidification and chemical stabilization are usually included in commercial processes and result in the transformation of liquids or semi-solids into environmentally safer forms. For example, a metal-rich sludge would be considered stabilized if it were mixed with a dry absorber such as fly ash or dry soil. Envirosafe Services Of Ohio, Inc. will conduct stabilization activities of both RCRA-hazardous and non-hazardous wastes to achieve compliance with treatment standards for land disposal restricted wastes or to improve the handling characteristics of wastes so they more closely match Envirosafe's standards for disposal. These standards have been instituted to allow Envirosafe to comply with performance standards required both by RCRA and sound waste management practices.
• Reagents	C-113	2. Overview of Stabilization Process at Envirosafe Prior to performing stabilization treatment activity at the Envirosafe facility, a representative sample of waste (prior to treatment) may be obtained from the generator. When stabilization is performed in order to meet a specific regulation-based treatment standard, a comprehensive, time-based treatability study is conducted by the Envirosafe laboratory to determine the proper stabilization mix design ratio, including specific additives necessary to achieve the desired result. When stabilization or solidification is performed to meet a handling characteristic, a bench-scale treatability study can be performed on a representative sample of waste prior to actual disposal. Solidification of wastes i.e., for the removal of free liquids, dust or pH control) may be performed using inert clays or other reagents without the addition of cement or pozzolans. Envirosafe will use both Portland cement-based and pozzolanic-based (lime-silica cement) stabilization systems which may also be supplemented with other additives (see Ohio Appendix C.13) such as bentonite clays, silicates, phosphated, thiosulfates, carbonates, sulfides, and other liquid or solid proprietary chemicals designed to meet a specific treatment standard or handling characteristic within a particular waste

		matrix. For example, soluble silicates can be used to "flash set" Portland cement and reduce the interference of metal ions in the curing process. Water, although it is considered to be a "fluxing agent" is used as an integral ingredient I the waste stabilization mixture design, as it is essential in both the Portland cement and Pozzolanic systems. The following quotes from the Guide to the Disposal of Chemically Stabilized and solidified Waste will serve to describe these systems: "Cement Based Processes" Common Portland cement is produced by firing a charge of limestone and clay or other silicate mixture at high temperatures. The resulting clinker is ground to a fine powder to produce cement that consist of 50% tricalcium silicates, 25% dicalcium silicates (also present are about 10% tricalcium aluminate and 10% calcium aluminoferrite). The cementation process is brought about by the addition of water to the anhydrous cement powder. This first produces a colloidal calcium-silicate-hydrate gel of indefinite composition and structure. Hardening of the cement is a lengthy process brought about by the interlacing of thin, densely packed silicate fibrils growing from the individual cement particles. This fibrillary matrix incorporates the added aggregates and/or waste into a monolithic, rock-like mass. Most hazardous waste slurried in water can be mixed directly with cement, and suspended solids will be incorporated into the rigid matrices of the hardened concrete. This process is especially effective for waste with high levels of toxic metals, since at the pH of the cement mixture, most multivalent cations are converted into insoluble hydroxides or carbonates. Metal ions may also be incorporated into the crystal structure of the cement minerals that form. Pozzolanic Processes (Not containing Cement) Waste fixation techniques based on lime products usually depend on the reaction of lime with a fine-grained siliceous (pozzolanic) material and water to produce a concrete-like solid (sometimes referred to as pozzolanic concrete). The most common pozzolanic materials used in waste treatment are fly ash, ground blast-furnace (slag), and cement kiln dust….Many, if not all of the comments associated with the cement systems apply to the pozzolanic systems…"
• Post treatment storage	C-114	Time Based Laboratory Waste Treatability Study Envirosafe will determine if a waste is suitable for cement or pozzolanic stabilization by evaluating baseline analytical data for the waste. This data can be supplied by the generator or can be determined by the Envirosafe laboratory. The Envirosafe laboratory will determine,

		based on experience with similar wastes or constituent evaluation, the most promising mix design ratios and additives and perform an initial treatability study (typically a 0-hour cure time will be used) on a representative sample of the waste. Based on the results of the initial studies, an optimum waste to additive ratio will be chosen. If required, a number of time-based TCLP extraction tests (or other required tests) will be performed on the waste material using the chosen mix design ratios. A final optimum mix-design ratio, optimum mixing time and required cure time will be determined on the basis of the waste's demonstrated ability to meet a required treatment standard or a specific handling characteristic. Time-based treatability studies, when needed, will be undertaken to determine the point at which a particular waste meets a certain treatment standard. For waste materials with specific regulation-based treatment standards, this will be done by performing a series of TCLP analyses at time 0, 1 hour, 2 hours, 4 hours, 8 hours and so forth as required to demonstrate compliance with the standards for a particular waste mix design. Time 0 refers to the point in time immediately after sample-additive mixing is completed, 1 hour allows one hour of cure/reaction time before starting the TCLP extraction and so forth. As part of the treatment process, stabilized waste must remain in a treatment container(s) until it has cured sufficiently prior to disposal. As a general rule, cure time is not expected to exceed 28 days, which is the usual maximum cure time required for Portland cement with no additives under ambient conditions. In most cases, stabilized waste additive packages will be designed to produce a product which will cure immediately or in no more than a few days time, allowing efficient use of mixing containers, treatment containers, and equipment. If longer-term curing is necessary for a particular generator's waste, Envirosafe will document the necessity for this by performing the appropriate time-based treatability study or actual analysis. Treated waste will not be placed in the disposal cell until the waste meets all applicable treatment standards identified in 40 CFR 268 (OAC 3745-59) in accordance with bench-scale and field-verification test results. To determine the optimum additive mix design ratio, the Envirosafe laboratory will calculate the amounts of additives, and waste necessary for bench-scale preparation of 100 or 250 gram lots of treated waste for subsequent testing (TCLP extractions, etc.). the chemist-technician operator will vary the initial mix-ration by predetermined amounts and choose, based on experience with similar wastes, the initial additive mix design ratio. The operator will scale-up the calculated amounts of additives necessary to achieve stabilization in the field for a typical shipment of waste and will try to optimize the mix design ratio so that it will be cost effective and conserve landfill space. Mix designs for common waste materials and waste matrices that the ESOI laboratory has prior experience with may skip the time-based method and go directly to the field test verification step. Examples of these types of wastes and matrices include, but are not limited to K062, electric arc furnace dust (and other non-K061 air pollution control dusts), F006 electroplating sludges, D006 (cadmium), D008 (lead) and

		other heavy metals in contaminated soils, metal-bearing WW treatment sludges, metal-bearing dross and sludges, sandblasting grits and sands, foundry sands and incinerator ashes. In cases where the ESOI laboratory has prior experience with a type of waste or a waste matrix, the laboratory may choose to prepare a "blind mix design" based on that prior experience. Blind mix designs are approved via the WPR process with the understanding that a field test of the blind mix will be performed (i.e., by testing the first load shipped to the facility for treatment). If the field test of the first shipment is successful (passing results are produced), and that mix design will continue to be used without field testing each batch treated (as described below) then the "blind mix" becomes a "master mix" that is renamed and re-approved via the WPR process. If the field test of a blind mix design does not produce passing results, the initial mix design is reformulated as necessary and tested on the next shipment of waste. Once a "master mix" design has been formulated, unrestricted acceptance of waste shipments, which are then subject to the periodic grab and hold testing requirements of ESOI's state permit, can occur (Refer to permit conditions at B.3(h)). In the case of K061 EAF Dust waste, a minimum number of successful field tests are required before the mix design is initially qualified. After initial qualification of the mix design, subsequent shipments of waste are subject to the periodic grab and hold testing requirements of ESOI's state permit (Refer to permit conditions at B..3(j)).
	C-117	Documentation of Field Stabilization Activities. Envirosafe Field Stabilization Worksheet Generator: Steel Dust company Waste Description:EAFD WSID: 10518-069 EPA HW #s: K061 Design ID: MMX Mix time (min): 20 Cure time (hrs): 0 Tons of waste treated: 20. Waste Additive Technical Data Waste Mix Ratios Calculated Percent Composition Output (Dry weight basis)
	C-118	The final calculated field mix design ratio for the particular shipment received will be scaled-up to the actual quantities of additives to be used to achieve the mix design ratio in the field. This information will be transmitted to the Envirosafe operations department on the same field stabilization worksheet and will include the laboratory-determined necessary mixing time and the minimum cure time which must elapse before the waste is placed in the landfill. The must also pass the paint filter test (or an equivalent visual inspection) and other Envirosafe-required tests before placement in the landfill.

		Waste and Additive Field Mix Design Data Bulk Mix Ratios: Waste Cement Lime LKD FESO4 Liquid Solid XSWater WASTE TONS: 20 1.61 3.21 0 0.37 0 0 4.47 Uncompacted CY 26.01 1.69 3.56 0 0.23 0 0 5.31 Unit Description T T T T PDS G PDS G # of units to Add 1.6 3.2 0 0 745.3 0 0 1072 94# bags 34.2 Totals waste and additives tons = 24.84 Waste and Additives Pounds = 49,689 Uncompacted CY = 36.80 A final field mix design ratio will be signed by the laboratory and given to the Envirosafe operations department to carry out. Operations will verify that each step in the process has been carried out and will document the completion of each step on the field stabilization worksheet. A copy of this document will be placed in the Envirosafe operating record required by 40 CFR 264.73
	C-119	Documentation of Treatment Standard Results A copy of the field stabilization worksheet, along with pertinent analytical results may be used to present stabilization treatment data to Ohio EPA representatives or WPR approval purposes, but more often a "blind" mix design based on laboratory bench-scale research or a working mix design for a similar waste material is used. A copy of such a mix design sheet is typically presented to Ohio EPA along with documented test results from the laboratory report. This type of mix design sheet can also be used to document results of an actual field test of a treatment mix design when needed or an update -change to an existing WPR approval. Analytical results may be documented in this manner or a laboratory report may be used.
• Other Type of Testing Frequency (periodic)	**C-119**	Certification and Testing of Treated Residues All appropriate notification and certification documents required in 40 CFR 268 for LDR wastes will be prepared and signed at the time the waste is placed in the disposal cell. Envirosafe's permit requires periodic testing of treated wastes to verify that treatment standards are being met. Minimum testing frequencies have been established to meet the requirements of 40 CFR 268.7 and Envirosafe's Part B RCRA permit. To meet its obligation to test LDR waste, ESOI will test the waste in its own laboratory or cause the waste to be tested by an off-site (commercial) laboratory accepted by ESOI. The laboratory must use the appropriate SW 846 test methods and required quality control procedures, as specified in SW 846, must be followed. Analytical results from waste tested in

		an off-site laboratory meeting these requirements may be used to meet Envirosafe's requirement to test the waste under 40 CFR 268.7(b),(c) and its state and federal permits. The same analytical results may also be used by the generator to meet testing requirements required by 40 CFR 268.7(a) or 262.11. In determining the number of times per calendar year that a waste will be tested to ensure that LDR standards are being met. Envirosafe will adhere to the schedule based on the requirements of its State operating permit, Permit condition B.3 **(NOTE: Need to see this permit condition to determine "frequency")**
• Mixing Method • Post treatment storage	**C-120**	Operational Procedures for Stabilization Processing ESOI will conduct stabilization activities of both RCRA hazardous and non-hazardous wastes to achieve compliance with treatment standards for LDR wastes and to improve the handling characteristics of wastes so they more closely match Envirosafe's standards for disposal. These standards have been instituted to allow Envirosafe to comply with performance standards required both by RCRA and sound waste management practices. Equipment used for adding stabilization additives, mixing and transporting the stabilized waste are operating units normally found at the facility for waste disposal activities. These are excavators, front end loaders, roll off boxes, dump trailers and dump trucks, similar earth moving equipment and integral waste delivery silos or systems as required. Envirosafe operators will use water to suppress dust emissions during treatment operations. Reagents which are dusty in nature can be kept covered when not in use or can be pre-treated with water to minimize dust emission during reagent charging operations. The chemical stabilization building will be equipped with air control devices to minimize emissions to the outside atmosphere. The stabilization equipment operator will receive additive and waste makeup data from the Envirosafe laboratory on a field stabilization worksheet for each waste load to be stabilized. Waste will be dumped into a metal treatment box. The stabilization additives will be added into the box in the mix design sequence prepared by the laboratory. The additives and waste will be mixed for the default time of one-half hour (unless a longer or shorter time is specified), which will include the time required to add and mix the various ingredients or additives into the raw waste material. Longer or shorter mixing times will be specified by the EOI laboratory o the field stabilization worksheet when they are applicable. Equipment operators will mix the waste and additives in the treatment box for the minimum time specified on the mix design field sheet. The operator will periodically inspect the waste for uniformity of color, consistency and homogeneity, taking special care to ensure that waste in the corners of the box are adequately treated. If the operator determines that the waste is not uniformly mixed, additional mechanical mixing will be performed until such time as uniformity is achieved, based on a visual inspection. Stabilized waste will generally be removed from the mixing box with an excavator and will

		typically placed in a roll-off box, a dump truck or a dump trailer. The stabilized waste will be retained in one of these containers until the required cure time has elapsed. After this time, has lapsed, the cured waste will be sampled or inspected for a paint filter test and any other required fingerprint analyses will be performed by the ESOI laboratory. Upon obtaining a successful testing result, the ESOI laboratory will approve the waste for disposal and the waste will be moved to an active cell dump pad for placement with other wastes.
Environmental Enterprises, Inc (EEI) OHD083377010		
	C-1	EEI is a commercial hazardous waste treatment and storage facility. Hazardous waste are received from a variety of off-site generators and are treated, consolidated, or stored prior to off-site shipment for ultimate disposal, recycling, or further treatment. Treatment in containers includes stabilization, neutralization, oxidation/reduction and blending. Treatment in tanks includes neutralization, oxidation/reduction, cyanide destruction, precipitation, and blending. Treatment in the miscellaneous units (shredder) include size reduction and stabilization. Various pre-treatments are also performed to prepare the waste for treatment. These include, but not limited to, crushing, dilution, rinsing, cutting, and other pre-treatments as described in D.10.
• Mixing Method	C-8	Stabilization in containers takes place in the Main building, outside the Main building in roll-off boxes and outside the Annex in roll-off boxes. The roll-off boxes are constructed of steel and are typically of 20cubic yard capacity. The hopper is constructed of steel and is 75 gallons in capacity. The roll-off boxes are located on a concrete-paved and bermed area to contain potential releases. Waste in Tank systems. There are four tanks utilized at EEI. Tank 1 is a 4,000 gallon stainless steel lined tanks used for batch treatment. Tank 2 is 1500 gallon ss tank used to treat acid-chloride wastes and to prepare small batches of acid waste for treatment. Tank 3 6000 gallon HDPE tank used to store neutral or corrosive wastes and Tank 4 a 550 gallon steel tank for water reactive wastes.
	C-21	100% of the containers are sampled by waste stream for total cyanide and amenable cyanide
	C-27	Stabilization. The tolerance ranges used by EEI for waste stabilization include: The waste must not be reactive with stabilization reagent causing ignition of organic constituents, generation of significant quantities of hydrogen, or generate noxious fumes or vapors.
	C-33	Lugger or Roll-Off Box Sampling. Lugger or roll-off boxes containing solids and sludge are sampled using trowels or shovels using a grid pattern over the surface. Specific locations are sampled by taking surface and subsurface grab samples. At least one grab sample location per 5 cubic years is required. The individual grab samples are composited to obtain a sample representative of the shipment.

		For a 20 yard container 4 samples are required. For a 30 yard container 6 samples are required
• Every batch or load tested	C-36	Frequency of analysis Waste Streams Prior to the acceptance of any hazardous waste by EEI, a chemical and physical analysis of a representative sample of the waste will be obtained, usually from the generator. The analysis will contain all of the information necessary to insure that it can be properly transported, stored, and treated to comply with the LDRs. Each waste stream is analyzed annually or when inspection of the wastes indicates the material differs from the waste described o the manifest or waste profile or if historical data indicates wide variances in shipment. Waste Streams"….for wastes generated by EEI as a residue from the treatment of a hazardous wastes, to render it non-hazardous and to be disposed of as non-hazardous, a complete TCLP analysis is performed for every shipment. The appropriate UHC analysis shall be included as necessary and wither as a constituent in the waste or in the waste extract depending on the waste code and the specified restrictions. EEI generated wastes may be sampled by QA techs, waste technicians or foreman. All have received on the job training regarding proper sampling procedures. All sampling is performed as described in this section. If characterization analysis is required by the off-site facility all sampling and analysis will be performed in accordance with the procedures given in Attachment C-30
	C-45	C.3. Land Disposal Restrictions Requirements for Restricted Waste Received From Off-site Prior to approval of any hazardous waste EEI must be provided with information to determine if the waste is restricted from land disposal. This information may be provided by the generator using their knowledge of the waste or from an analysis of a representative sample of the waste. If the generator does not supply that information EEI will perform that analysis at the request of the generator. For each shipment of restricted waste that does not meet treatment standards, the generator must provide EEI with the notice and certification. For each shipment of restricted waste that can be land disposed without further treatment the generator must provide EEI with the notice and certification. For each shipment of restriction waste that is subjected to an exemption, a variance or a case by case extension the generator must provide EEI with a notice that the waste is not prohibited from land disposal.
	C-46	Prohibitions Wastes and/or treatment residues of wastes restricted from land disposal must meet applicable treatment standards. This section describes the procedures for sampling, testing, and evaluating wastes and treatment residues of wastes treated by EEI to ensure compliance with the applicable treatment standards and prohibition levels.

		C.3 Dilution Prohibited as Substitute for Treatment Wastes and/or treatment residues of wastes restricted from land disposal must meet applicable treatment standards prior to land disposal. Dilution will not be used to purposely treat wastes or waste treatment residues that are restricted from land disposal except in the following circumstances --Waste are hazardous only because they exhibit a characteristic in treatment systems. Which discharge to waters of the US pursuant to the CWA discharge permit; or wastes that are treated in a CWA equivalent system; or wastes treated in pre-treatment systems as defined in section 307 of the SCWA; unless the waste is a D003 reactive, cyanide WW or WW; or a method other than DEACT has been specified as a treatment standard.
	C-46	Dilution Prohibition for lead containing wastes. It is prohibited to add iron filings or other metallic forms of iron to lead-containing hazardous waste to achieve any LDR treatment standard. This includes D008 wastes, all characteristic wastes containing lead as a UHC and hazardous media containing lead.
	C-52	Treatment Standards and Analytical Methodology and Treatment Residues. Waste and treatment residues of restricted waste may be land disposed only if they meet treatment standards or prohibition levels. Treatment standards are based on the performance of the best demonstrated technology to treat the waste, and are expressed either as performance standard based on the performance of the Best Demonstrated Available. The same sampling and analytical methods are used for EEI generated wastes or treatment residues as those used for waste received from off-site. Each waste stream is reviewed and if necessary repeat analysis is performed at least annually. Technology (BDAT) or on a specified technology Compliance with performance based treatment standards are measured by determining the concentration level of hazardous constituents in waste or treatment residue. Any method of treatment may be used to achieve the treatment standards except for a prohibited method (such as impermissible dilution). When treatment standards are expressed as specified technologies the waste must be treated by that technology prior to land disposal treatment standards are identified in OAC 3745-270 AND 40 CFR Part 268 Subpart D. Treatment standards are expressed in terms of CCEW listed in OAC 3745.59-41 AND CFR 268.41, in terms of specified technologies in OAC 3745-270-42 and 40 CFR 268.42 and in terms of CCW in OAC 3745-270-43 and 40 CFR 268.43 (See Attachment C-24 for treatment standards). The current standards are available for review at the facility
	C-53	C.3c(3) Wastes or Treatment Residues With Treatment Standards Expressed as a Constituent Concentration in Waste Extract For each shipment of wastes or treatment residues of restricted wastes with a treatment

		standard expressed as CCWE, EEI will use their knowledge of the waste, or test an extract of the waste, to determine if it meets the applicable treatment standards listed in the CCWE of OAC 3745-270-41© and 40 CFR 268.41©. If testing is necessary, the toxicity characteristic TCLP procedure will be performed in accordance with the procedures specified in OAC 3745-270 AND 40 CFR Part 268, Appendix I by contract lab. The leachate will then be analyzed to determine if the waste or treatment residue meets the applicable treatments for the constituents. The analytical methodologies for analyzing for the constituents are listed in Table C-5 and Attachment C-30. The sampling methodologies for obtaining a representative sample is listed in OAC 3745-51 and 40 CFR 261, Appendix I and in Table C-8. See Attachment C-24 for treatment standards. This attachment is available for review at the facility
	C-54	<u>C.3c(4)Wastes or Treatment Residues with Treatment Standards Expressed as Concentration in the Waste.</u> For wastes or treatment residues of restricted waste with a treatment standard expressed as a CCW, EEI will use their knowledge of the waste, or treatment residue of the waste, to determine if it meets applicable treatment standards listed in OAC 3745-270-43(a) and 40 CFR 268.43(A). If testing is necessary, the analysis will be performed using methods specified in Table C-8 by contract lab. See Attachment C-30, available for review at the facility, and TABLE C-5 for methods. The sampling methodologies for obtaining a representative sample are listed in OAC 3745-51 and 40 CFR 261, Appendix I). See Attachment C-24 for treatment standards. The attachment is available for review at the facility. The generator knowledge used for this and all treatment residues is based on waste codes entering the process. It is assumed that the same waste codes will apply to any treatment residue with possible exception of D002 if the waste is neutralized. Note that EEI has profiles in place at off-site facilities for further treatment and provides information on the profiles to the level of detail required by the receiving facility. This typically does not include a full-scale characterization analysis. Each facility has specifications which must be met for acceptance of the waste. EEI may performs screening rests to confirm the waste meets the specification prior to shipment and the receiving facility performs their own analysis upon receipt to confirm conformance with their specifications. If a full waste characterization is required, such as for shipment to a non-hazardous facility after treatment, all methods and procedures specified in Attachment C-30 are followed, this attachment is available for review at the facility. <u>C.3d (1) Treatment Standards Expresses as Specified Technologies</u> After a restricted waste with a treatment standard expressed as a specified technology n OAC 3745-270 AND 40 CFR 268 has been treated by that technology it may be land disposed unless specified otherwise. See Attachment C-24 for treatment standards. The current standards are available for review at the facility
	C-54	<u>C3d (2) Notification and Certification</u> Notification and/or certification forms are typically provided by the TSDF receiving EEI's restricted waste. If the forms are not provided, EEI uses its own form "Restricted Waste

		Notification and Certification" form See Attachment C-21. These forms are taken from the elements listed in OAC-3745-270-07. These forms are retained in EEI's operating record and will be kept ON-SITE until closure of the facility. Completion of these forms is based on the container's hazardous waste control ticket and the waste profile as well as any treatment conducted on the waste. The hazardous waste control ticket includes the date of receipt (storage) and contents. This information is also obtainable from the operating record via profile number. All notices and notifications received from generators and notices provided by EEI to facilities receiving EEI generated wastes and treatment residues are retained with the manifests.
	C-54	EEI will maintain copies of all LDR notification/certification documents ON-SITE for all "chemical" fuels and/or "chemical" fuels blending residues shipped off-site until the facility's closure
	C-56	C3d(2)(c) Treatment residues of characteristic waste sent to a subtitle D disposal facility. If EEI sends treatment residues of waste that had exhibited a characteristic prior to treatment and no longer exhibited that characteristic to a subtitle D facility, the notification and certification specified in OAC 3745-270-09(d) (40 CFR 268.9(D)) will be sent to the USEPA Regional Administrator.
	C-57	C.3h Storage Time Limit. All waste received and stored by EEI is subject to the 1-year time limit specified in OAC 3745-270; various subparts this applies to containers and tanks. The operating record is used to identify the contents and accumulation start date
	Section C Table C-8	Samplers Recommended for Various Types of Waste Waste Piles Waste pile sampler Not applicable to sample (NOTE: Various tables in this WAP say that sampling occurs from a waste pile. Under LDRs hazardous waste cannot be placed on the land unless it meets the LDR treatment standards. Therefore, waste piles are in violation of LDRs if the waste is hazardous and has not been treated or meets the LDR treatment standards) (NOTE: Not clear whether these sampling activities occur before or after treatment)
Envirite of Ohio, Inc. Canton, Ohio Waste Analysis Plan Revision 15.3 December 2015 OHD980568992		
	1	Introduction: As waste is processed through the plant, every step is carried out exclusively under written instructions from the laboratory. The laboratory staff refers to the information obtained during analysis of both the prescreening sample and the sample which was taken

		from the incoming waste shipment as they follow the progress of each batch of waste. Each batch is sampled and analyzed several times during the treatment process. Perhaps the most important phase of Envirite's Waste Analysis Plan is the contingency testing program which verifies that all treatment residues meet the regulatory standards before they are taken off-site for disposal. Description: The WAP is a multi-step process which begins with the Technical Marketing Representative (TMR) at the customer's plant, and ends with the analytical verification of quality effluent and treatment residues per the applicable regulations.
	6	A TCLP analysis for nine (9) leachable metals is performed on prospective wastes; this analysis is repeated on an annual basis. This reanalysis/recertification is required to assure that the appropriate treatment standards are being met per the LDRs.
	18	Final Treatment Certification: Treatment, Residues Other Than Delisting Envirite of Ohio, Inc. Canton, Ohio Parameter-Rationale for Selection-Test Method Toxicity - Land Ban requirement - TCLP Paint Filter Liquids test-Land Ban requirement-Gravity filtration Cyanide total-Land Ban requirement - distillation, titration Cyanide amendable - Land Ban requirements - distilation, titration
	20	Treatment Simulation In the laboratory, the analyst simulates the treatment of the waste as it occurs in the plant. Samples which are liquid/solid suspensions with less than approximately 20% suspended solids are treated in the laboratory using a process which simulates treatment in the liquids process sufficient free water to be effectively mixed in the liquid reactors are treated in the laboratory using a process which simulates treatment in the solid processing units (SPU). Based on the results of this simulation, several judgments are made: --Is the quality of the effluent from this waste (if any) in compliance with the local POTW limitations? --Will the treatment residue meet the requirements of its EPA classification? Treatment residues to which delisting is not applicable must meet the requirements of the specific regulatory reference. Are any unsafe conditions observed during the treatment simulations, such as: --gas or fume generation in amounts which constitute a hazard? --excessive heat generation due to heat of neutralization or heat of oxidation during chlorination? --if different wastes are mixed during treatment simulation or to determine compatibility, the following procedure is to be followed:

		Each intended mixture is mixed proportionally in the laboratory prior to any mixing of bulk wastes in the plant. If testing shows any indication of chemical reactions such as color change, exothermic or endothermic reactions, or evolutions of gases, the wastes are judged to be incompatible and are not to be mixed.
• Every batch or load tested	**31**	Analysis During Waste Treatment As each waste shipment is processed through the plant, every step is carried out under written instructions from the laboratory. The laboratory staff refers to the information obtained during analysis of the prescreening sample and the sample taken from the actual shipment as they follow the progress of each batch of waste. Each batch is sampled and analyzed several times during the treatment process. Sample collection procedures for in-process waste treatment are outlined in the company's sampling plan. Final Treatment Certification Aqueous Phase The aqueous phase of each liquids processing batch is analyzed for pH and metals before it is released to filtration. The batch is retained in the reactor until it is confirmed that the aqueous phase meets the discharge limitation for the facility. The aqueous discharge from the plant is sampled continuously during filtration for analysis in conformance with the discharge permit. Sample collection procedures for the aqueous discharge are outlined in the company's sampling plan. Sludge and Leachate Quality Composite samples of treatment residues for delisting are analyzed for TCLP metals, cyanide, and the target organic compounds. All treatment residues are retained on-site and in containers until the testing is completed. If the concentration of metals or cyanide in the leachate exceeds the delisting levels, the waste is brought back into the Solids Processing Unit (SPU) for further treatment. If any of the eight target organic compounds exceed delisting levels, those treatment residues are managed as hazardous waste and disposed of in compliance with all applicable hazardous waste regulations. At the end of each month, a composite sample of all treatment residues produced during that month is analyzed by GC/MS for organic priority pollutants. This data is submitted to EPA semi-annually. Table 2-8 lists the parameters and test methods to analyze for compliance with delisting. The specific limits applicable to delisting are listed in Section 2.1.6. Treatment residues to which delisting does not apply undergo the applicable testing to verify that the residues meet the regulatory requirements for land disposal. Table 2-9 lists the test methods for analyses for compliance with ALDR requirements. Table 2-12 lists the universal treatment standards which must be met or treatment residues which are not delisted.

		Sample collection procedures for the treatment residues are outlined in Envirite's sampling plan.
	39	2.1.13 LDRs Generators whose wastes are subject to LDRs and who ship their wastes to the Envirite of Ohio facility for treatment must comply with the tracking and recordkeeping requirements I OAC 3745-270-07. Generators must submit a one-time RCRA Land Disposal Notification/Certification Form with the competed Hazardous waste manifest accompanying the initial shipment or wastes which do not meet the applicable treatment standard. No further notification is required unless the waste changes. A copy of the notification/certification form is shown is figure 2-6 Generator Notification/certification forms are filed with the manifests as part of the facility's operating record. The generator is responsible for the determination of, and completion of, the appropriate section of the form. Facility personnel and Envirite's Analytical Services division may provide technical assistance. On a routine basis, Envirite submits a certification for each load of treated material disposed of in a non-hazardous landfill to the Director of the Ohio EPA verifying that each load has met land disposal treatment standards. This notification and certification is required as specified per OAC 3745-270-09 (d) for the disposal at a RCRA subtitle D waste treatment facility of wastes which prior to treatment at a hazardous waste treatment facility exhibited a hazardous characteristic. An example of this notification/certification is shown in figure 2-7. TCLP analysis of waste streams is repeated on an annual basis. This reanalysis/recertification is required to assure that the appropriate LDR treatment standards are being met. Envirite monitors new land disposal restrictions proposals at the corporate level and shall modify procedures and documentation as warranted by adopted regulations.
	Section 2 Page 55b	2.2 Sampling Plan Purpose: To ensure the collection of representative samples of wastes, either liquid or solid, that Envirite may handle in the scope of its operations. These operations include the transportation, storage, treatment, and disposal of inorganic waste. Objective: To obtain accurate analytical information that can be used to evaluate chemical wastes. Representative Sampling: Representative samples are defined as samples exhibiting average properties of the whole waste and address the issue of sampling accuracy; the closeness of a sample value to its true value. Sufficiently accurate samples will be considered reliable estimates of the chemical properties

		of the waste. Sampling accuracy will be achieved by composite sampling which entails collecting several random samples which will be combined into a single sample. The methods and equipment used for sampling waste materials will vary with the form and consistency of the waste materials to be sampled. Samples will be collected using the sampling protocols listed below, for sampling waste with properties similar to the indicated materials.
		In-Process Batch Sample Collection Liquid in-process batch samples are collected from the liquids processing batching tanks/reactors Sample container, sampling equipment, sample label requirements (NOTE: detailed in the document) Sampling Procedure: The sample spout valve is opened and material allowed to drain into a waste pail for five to ten seconds. After the sampling spout has been flushed, the sample may be collected in the plastic beaker by opening and closing the sample spout valve. Sampling personnel must have the appropriate safety equipment. Solids in process batch samples are collected from the solids processing blenders. Sample container, sampling equipment, sample label requirements are discussed. Sampling Procedure: An appropriate sampling devise such as a wide-blade metal spatula or hoe is used to scoop the material from the blender; tongue depressors are used to transfer the sample to the plastic beaker. Sampling personnel must have the appropriate safety equipment.
• Other (repetitive sample to fill containers)	Section 2 Page 67	2.2.7 Final Treatment Certification Sample Collection Liquids Processing Treatment Certification Aqueous Phase: Sampling Equipment, sampling container are discussed. Sampling Procedure: This sampling protocol is approved by the City of Canton POTW. The samples are taken at the point where effluent discharges into the weir box. Teflon lined vinyl tubing carries the aqueous discharge from the weir box to the sampler to the sample container. The interval sampler is activated by the flow sensor in the weir box. The interval at which samples are taken is determined by the flow rate of the aqueous discharge. The refrigerated sampler contains two 2 1/2 gallon polyethylene bottles. Sample collection alternates between bottles at 24 hour intervals. The flow proportioned composite sample is collected in one bottle for 24 hours then the sample is collected in the seconds bottle for the following 24 hours. At 24 hour intervals a representative sample is taken from the refrigerated sampler. The sample represents a 24-hour flow proportioned composite sample of the aqueous

		discharge. This sample is submitted to the designated laboratory personnel immediately after being collected. Sludge/Solid Phase: Sample container, sample equipment, sample labeling are discussed. Sampling Procedure: Liquids processing batches are filtered through a rotary drum vacuum filter and/or plate and frame filter press. Samples are taken from the vacuum filters by using the wide blade metal spatula or tongue depressor to scrape the sludge from the knife-edge of the filter. Samples are taken from the filter press by using the wide blade metal spatula or tongue depressor to scrape the sludge from a filter plate prior to the drop. Repetitive sampling is necessary to fill the sample containers completely full with no headspace. Solids Processing Treatment Certification There is no aqueous phase from the solids treatment processing. Sample container, sampling equipment sample labeling are discussed. Sampling Procedure: Solids processing batches are made in blenders and in-ground mixing tanks. Batch treatment residues are sampled immediately prior to discharging (blenders) or loading out (in-ground mixing tanks) from the tanks to the roll-offs or dump trailers. A garden hoe is used to scoop the sludge from the blender, then a device such as a cleaned spatula or disposable wooden tongue depressor is used to transfer residue from the how to the sample ar. The excavator bucket is used to pull samples from in-ground mixing tanks after treatment. A cleaned spatula or disposable wooden tongue depressor is used to transfer the sample to the sample container. Repetitive sampling may be necessary to fill the sample containers completely, with no headspace. Dry Solids Processing Treatment Certification Sampling container, sampling equipment and sample labeling requirements are discussed. Sampling procedure: Dry solids processing batches are made in the pug mill and sampled as the treated material exits the pug mill discharge chute and falls into the bulk container. A sample will be taken in the first five minutes of operation, in the last five minutes of operation and every 15 minutes during operation. A minimum of three samples will be taken from each batch. An appropriate sampling devise such as a long-handled, wide-blade metal spatula or shovel is used to scoop the sludge as it exits the pug mill. Equal volumes of material are taken from each sample collected and placed in a sample bucket with a lid. At the conclusion of the batch, the contents of the sample bucket are mixed and a sample container is filed. Tongue depressors are used to transfer the sample from the sample bucket

		into the sample container. It is necessary to fill the sample container completely, with no headspace. Composite Sampling: At the end of each defined processing period, a processing composite for each type of processing is made. Composite sampling is only applicable to delisting.
	Section 2 **Page 84**	Table 2-21 Frequency of Sampling Envirite of Ohio, Inc. Canton, Ohio Incoming Shipment Sample/Truck Sample - Every waste shipment destined for the treatment process when it arrives at the facility. A re-sample is necessary if the organic screen analysis is not completed within two hours of sample collection. In-Process Batch Sample/Liquids Processing - At the end of the neutralization step of each batch and at the end of the stabilization step of each batch In-Process Batch sample/Solids Processing - at the end of the stabilization step of each batch Final Treatment Certification/Liquids Processing - Aqueous phase -composite sample every 24 hours; Sludge/solid phase - Every batch is sampled as it is filtered. Final Treatment certification/solids processing - sludge/solid phase - Every batch is sampled as it is discharged from the blender to the dump trailer.
Veolia ES Technical Solutions, LLC **Menomonee Falls, WS** **WAP Date: 07/03/2013** **WID003967148**		
	Page 3-8	3.3.2.1 Unique "Supplemental Analyses". Mix:Ratio Evaluation is used to determine the appropriate ratio of waste to reagent for optimum treatment. Quick Leach Extraction Procedure is used as a rapid extraction procedure to qualitatively duplicate metals leachability. Stabilization Evaluation is run to determine whether the waste is amenable to stabilization and to determine the ratio of stabilization agent to waste required to effect stabilization
	Page 3-12	3.4.1 Procedural Requirements. For each new waste stream that is a candidate for delivery to the facility, except as noted, the following procedures are implemented, the generator will provide: (1) Pertinent chemical and physical data provided on the Waste Profile Sheet; (2) a representative sample, if required; and (3) LDR notification/certification information and/or data.
	Page 3-28	3.6 Process Operations Procedures. Each movement of a waste within a facility during which any change in its characteristics may occur makes the waste subject to additional inspection, sampling, and analysis to determine appropriate handling and management of the waste. Many of the analyses needed for the storage or treatment functions are performed during

		incoming waste identification. These are not repeated unless it is known or believed that the waste characteristics may have changed during storage or processing. Anticipated process operations at the facility, for which current and periodic sampling and analyses are important, included the following (1) storage or (2) treatment (consolidated into bulk storage) or treatment (stabilization).
• Other Types of Testing Frequency (as needed)	**Page 3-30**	3.6.2 Treatment operations. The proper and complete treatment of a particular waste depends upon the appropriate sampling and analyses during selected phases of the operation. The results of this analytical program serve to determine safety constraints, confirm treatment method selection, and identify the process parameters. In addition, these analyses provide data to site management enabling the sound and environmental safe handling of all wastes to prevent adverse reactions or impacts resulting from waste management operations. In general, the treatment sampling/analyses program may be divided into three segments, each with a specific purpose: (1) Pre-treatment analyses confirm that the waste falls within the selected process design and allow the fine tuning of the process operational conditions for optimum treatment; (2) in process analyses are performed to control the process and to monito progress, and (3) post treatment analyses confirm successful treatment and the characteristics of the process effluent are such that it can be sent to the next step (disposal or further treatment), based upon permit, regulatory or process constraints. Wastes or residue resulting from the onsite treatment of LDR wastes will be analyzed and/or evaluated as needed against the appropriate treatment standards or prohibitions. Any residues or waste sent off site for disposal or further treatment will have the appropriate notification and/or certification form
• Reagents	**Page 3-32**	3.6.2.2. Stabilization. Stabilization is a process by which wastes can be treated to remove free liquid, producing a mixture that has (1) no free liquids and (2) sufficient structural integrity for landfilling. In addition, stabilization can be used to treat (i.e., immobilize) or reduce the toxicity of certain inorganic wastes including some LDR compounds). In this process, the wastes are mixed with a stabilizing agent (e.g., lime, cement kiln dust, etc.) and/or other suitable reagents, (i.e., oxidizing and reducing agents, etc.) that cause a chemical reaction, producing a treated mixture suitable for land disposal. The general approach, is implemented for each batch treatment.
• Post treatment storage	**Page 3-33**	3.6.2.4 Pre-treatment and stabilization of LDR Wastes. In this process, certain LDR wastes are treated to meet the appropriate LDR treatment standards of prohibition. For the purposes of this discussion, treatment will include, at a minimum stabilization for the waste and in some instances will include a pretreatment step prior to stabilization. The pretreatment may include using other reagents such as oxidizing or reducing agent to chemically convert constituents in the waste into a form more suitable for stabilization. The pre-treatment analyses for LDR waste to be treated to meet a particular treatment standard or prohibition consists of the “mandatory analyses” performed on the pre-acceptance

		sample and incoming waste shipment. In addition, a portion of the pre-acceptance sample may be treated and then analyzed using the appropriate test method TCLP to demonstrate that the LDR waste can be treated to meet the appropriate standard or prohibition and to establish the treatment guidelines to be used to treat each waste shipment. Upon receipt, the LDR waste shipment will be sent to the stabilization treatment unit for treatment. The treatment guidelines, established during the pre-acceptance procedures and demonstrated to achieve the appropriate treatment standard, will be used to treat each shipment of that LDR waste. The facility will conduct post-treatment analysis is on the residue as needed to ensure that the process continues to be effective in meeting the treatment standards. The current post-treatment analysis protocol specifically addresses processes, frequency analyses and corrective action. The treated residue is typically stored in portable containers (e.g., roll-off bins, lugger boxes, etc.) while awaiting the results of the post-treatment analysis. For wastes approved by the WDNR, a reduced sampling and analysis frequency from that identified in Condition 32(b) of the final Determination dated September 30, 1993, may be utilized. For these wastes, only the first and last boxes of treated waste from the treatment run will be sampled and analyzed in order to ensure that the process continues to be effective in meeting the treatment standards. A treatment run consist of the treatment of multiple waste shipments treated using similar recipes.
• Other (representative and composite sampling)	**WAP C-1**	The LDR have specified the use of "grab" sampling for most of the compliance demonstrations to the LDR BDAT treatment standards. The current EPA guidance for RCRA sampling is SW-846 which specifies representative and composite sampling. SW-846 makes no reference of "grab" sampling. When industry or EPA guidance becomes available through the regulatory or SW-846 mechanism, "grab" sampling will be hereby incorporated into this document and conducted to demonstrate compliance the LDR. Until such time, the sample of LDR wastes will be conducted as previously identified in this document.
Revised WAP, not finalized 12/19/2016		
• Grab Sampling (three grab samples all must meet LDRs)	**Page 3-6**	3.2.4 Post stabilization Treatment Sampling. The LDR have specified the use of "grab" sampling for most of the compliance demonstration to the LDR BDAT treatment standards. This includes the non-wastewater materials that are accepted for treatment via stabilization at this facility. Veolia will analyze a minimum of three grab samples from each batch of waste processed to document compliance with LDR treatment standards. In order to ensure the waste has been successfully treated to meet the LDR standards, results for all characteristics analyzed must be below the established numerical LDR treatment standards identified in 40 CFR 3268.48 and s. NR 668.48(1) WAC. Exceptions to this are identified in section 3.6.2.4
	Page 3-34	The current post-treatment analysis (outlined in 3.2.4) protocol specifically addresses processes, frequency analyses and corrective action.

		For wastes approved by the WDNR, a reduced sampling and analysis frequency may be utilized. For these wastes, only the first and last boxes of treated wastes from the treatment run will be sampled and analyzed in order to ensure that the process continues to be effective in meeting the treatment standards
	Page 3A-2	II. Supplemental analyses, Unique Supplemental analyses. Stabilization Evaluation - the waste to be stabilized is mixed with at least one ratio of cement kiln dust or other suitable reagent. A determination is made for the waste to dust ratio whether or not it will pass the paint filter test (no free liquid) or other appropriate treatment standard. In addition, any heat change (curing) which occurs is recorded as the waste/cement kiln dust mixture is "setting". This is measured with a thermometer or digital thermometer with probe. The occurrence of any violent reaction of reagent to waste sample is to be noted.
Badger Disposal of WI, Inc WID988580056 (NOTE: According to Mike Ellenbecker, the facility does not do stabilization)		
EPA Region 6		
Chemical Waste Management, Lake Charles, LA LAD000777201		
Clean Harbors Baton Rouge		
US Ecology Tulsa OKD000402396		
Clean Harbors Lone Mountain OKD065438376		
	Page 1	Clean Harbors has established the following procedures to govern the acceptance of all hazardous waste at its Lone Mountain Facility. The procedures established in this WAP will assure that this facility will be in compliance with all the requirements of 40 CFR 264.13, including the land disposal restrictions of 40 CFR Part 268. The most recent revision of this plan will be maintained at the facility as part of the operating record
	Page 21	4.2.2 Waste Piles. Waste accessibility, frequently a function of pile size, is a key factor in the sampling strategy for a waste pile. Piles are sampled by multiple vertical sections using triers, tubing, shovels, or similar devices….
	Page 36	7.2 Treatment operations. The proper and complete treatment of a particular waste depends upon appropriate sampling and analysis during selected phases of the operations. The results

		of this analytical program serve to determine safety constraints, confirm the selection of treatment methods, and identify the process parameters. The treatment sampling analysis program may be divided into three segments, each with a specific purpose. (1) Pre-treatment analyses confirm that the waste fails within the selected process design parameters and allow the fine-tuning of the process operational conditions for optimum treatment; (2) In-process analyses are performed to control the process and to monitor progress; and (3) Post-treatment analyses confirm successful treatment and that the characteristics of the process effluent are such that it can be sent to the next step (landfill disposal, recycling, etc.) based upon permit or process constraints.
• Reagents	**Page 39**	7.2.5. Stabilization. In this process, waste is treated to meet LDRs (e.g., removal of free liquids, chemical and physical stabilization to remove or immobilize hazardous constituents, etc.) or to meet other appropriate requirements (e.g., permit or regulatory requirements). Microencapulsation and macroencapsulation (as defined in 40 CFR 268.45) using pozzolanic materials (e.g., fly ash, Portland cement, cement kiln dust, lime, gypsum) are considered a form of "stabilization" as the process is virtually identical. In cases where the debris to be encapsulated is too large to manage in containers or the stabilization tanks, macroencapsulation may be conducted within the landfill. (NOTE: LDR prohibits treatment in a land disposal unit) The untreated debris will be placed in a suitable final location (e.g., in forms, etc) or container within the cell and macroencapsulated in place with the selected reagent. Pre-treatment analyses consist of tests necessary to insure the wastes can be treated to meet the applicable treatment requirements. Prior to treatment some materials (debris, etc) which exhibit high structural integrity (e.g., piping, tanks, etc) may be reduced in size to ensure appropriate treatment occurs (e.g., microencapsulation). In-process analyses are generally not required for this treatment. Post-treatment analyses are necessary to assure that all free liquids have been reacted and the mixture is suitable for final handling or processing. The Paint Filter Liquids Test is regulatory checked in order to monitor the process (i.e., elimination of free liquids). Also to ensure restricted wastes meet their applicable treatment standards. Approximately 10-20% of the treated batches are tested to confirm adequate treatment and/or refine the appropriate recipes. 7.3 Landfill Disposal. Important considerations in landfill operations are waste/liner compatibility and leachate/leachate collection system materials compatibility. Other considerations include preventing ignitable, incompatible, and reactive wastes from contacting each other. Further assurance is required to minimize free liquids. Restricted waste is tested to confirm it meets applicable treatment standards
	Page 40	7.3.3 Waste Containing Free Liquids. All materials will be checked for free standing liquids. If free standing liquids are present, they will either be stabilized by placing a stabilization agent in the container or placing the contents into the stabilization system and crushing or shredding the drum, or by shredding the drum and its contents and, if necessary, stabilizing the shredded material. If free standing liquids are not obvious and process specific criteria are met, then the waste may be landfilled directly. Bulk loads, which otherwise do not contain significant

		quantities of free liquids (less than ten percent) may require only "spot" stabilization in order to meet the requirement of 40 CFR 264.314(a)(2) proper to landfill disposal. In these situations, stabilization may occur within the containers. If free liquids are decanted, any remaining semi-solid material will be stabilized using fixation agents so that free liquids are no longer present prior to landfilling, if necessary. Drums will be inspected in accordance with the procedures specified in Section 6.1. Batched stabilized wastes will be test using the paint filter Liquids test. Restricted waste may be stabilized and disposed, provided the waste or the waste extract after stabilization does not contain compounds in excess of the values listed in the Treatment Standards for Hazardous Wastes found in 40 CFR 268.40, as determined in the pre-acceptance characterization
	Page 42	8.0 Land Disposal Restrictions. Subsequent to the HSWA of 1984, a series of prohibitions or restrictions have been placed on the land disposal of certain hazardous wastes. Ultimately, EPA will systematically review all hazardous waste streams and issue regulations governing their management. These reviews have taken place in phases, with newly identified or newly listed wastes to be reviewed within six months after their listing (Note: there is no "hard hammer" for these newly identified or newly listed wastes should EPA not promulgate LDRs). This section of the WAP is intended to guide the user in the management of wastes destined for land disposal at the Lone Mountain facility. In as much as the HSWA regulations are (thus far) statutory-based, most HSWA-based regulations will override permits. Regulatory changes generally do not override permits and may not be effective until the permit is amended. Therefore, the reader must be aware of the current LDR regulations as they must be met. This section, therefore, lends to restate the current HSWA LDR program requirements and to serve as clarification for those issues not fully addressed in the governing regulations as promulgated. The permittee shall receive from the generator of treatment facility, comprehensive analytical data (e.g., GC, GC/MS, etc) or a written certification which lists the identified restricted waste and/or constituents which the waste stream any contain based on the generator's knowledge or analysis of the waste. If the permittee does not receive this information in writing (e.g., a completed waste profile sheet or analytical data), then a comprehensive analysis to determine the concentration of appropriate restricted constituents for the waste stream(s)lack such information will be obtained, as needed, prior to land disposal. This requirement, as for all subsequent requirements, are limited to land disposal restricted waste destined for land disposal at this facility
	Page 42	8.1 History of Land Disposal Restrictions
• Other type of testing Frequency (at least annually)	**Page 43**	8.2 Wastes with Applicable Treatment Standards. Wastes with effective treatment standards can be broken into two categories for the purpose of waste analysis. These two categories are described further in the following sections. 8.2.1 Wastes Treated at the Facility. Certain wastes are treated at the facility to meet the specified treatment standards in 40 CFR Part 268. Typically, the facility requires a

		representative sample of the waste be supplied by the generator. That waste sample is then mixed with various types of reagents (e.g., fly ash, cement kiln dust, Portland cement, hydrogen peroxide, sodium hypochlorite, activated carbon, etc.) to determine an acceptable recipe by which the waste is treated (separately or along with other wastes) so that is passes the required treatment standard. A treatment certification will be made for each batch of LDR waste which is treated to meet the applicable treatment standard. The treatment procedure is verified periodically, typically at least annually, In advertent treatment (e.g., supplemental fuel blending, filtration, etc.) not indented to treat the LDR waste to a treatment standard is not included as "treatment" for this purpose. 8.2.2. Waste Meeting the Treatment Standard Upon Arrival. The facility will receive waste which meets the treatment standard that either has been treated by the generator or a treatment facility, or meets the standard as initially generated. Waste falling into this category will be analyzed to confirm that it does meet the treatment standard annually (or whenever the permittee believes the waste may no longer meet the standard). However, if the treatment of a restricted waste is performed under a treatment and/or testing protocol approved by EPA or other authorized state agency, the annual verification analysis may be waived. Wastes having method-based LDR treatment standards are not subject to annual verification by the permittee if a certification has been received from the generator, treatment facility, etc. In some cases, (e.g., incineration), there is no applicable analysis to verify the waste has been treated by the specified method.
	Page 44	Notifications and Certifications
• Post treatment storage (in landfill)	**Page 45**	8.4 Recipe Development. When the facility will perform treatment of a waste, a "recipe" is chosen by the permittee which will meet the applicable treatment standard(s). This recipe is then noted in the Operating Record of the facility. All waste shipments of that particular waste are then treated according to the procedure identified as capable of attaining the applicable treatment standard (except in the case of wastes which will be batched or when post-treatment analyses will be used to confirm adequate treatment). Due to variations in water content, etc, in waste shipments, the recipe may exhibit fluctuations in reagent quantity; however, it is still considered the "same" recipe. A treatment certification will be made for each batch of LDR waste which is treated to meet the applicable treatment standard. It may be appropriate to create recipes after acceptance, but prior to treatment (e.g., batches of mixed waste streams, etc.) or perhaps after treatment (if an approximate recipe is determined). In most of these cases, the treatment standards must be verified prior to ultimate disposal. 8.5 Verification of Treatment Standards. Treated batches of wastes are assumed to meet the applicable treatment standard and will be located in the landfill cells. If post-treatment analyses determine that a treated batch does not meet the standard, the batch will be retrieved for retreatment. The same standards hold true for periodic or annual verification of certified wastes or shipments.

		Pending verification analyses, the verification batches or shipments will be segregated to facilitate complete retrieval. Retrieved materials may be staged prior to retreatment, for periods not to exceed 72 hours, on the truck parking pad
	Page 46	8.6 Verification of UHCs. On May 10, 1993, the EPA promulgated an interim final rule establishing treatment for UHC in ignitable (D001, except high TOC category) and corrosive (D002) hazardous wastes. In the Phase II LDR rule, UHCs were extended to the D012-D043 hazardous wastes. In the Phase III LDR rule, UHCs were extended to D003 wastes. EPA defines UHCs as any constituent listed in 40 CFR 268.48, table UTS except, fluoride, selenium, sulfides, vanadium, and zinc present at levels above the UTS at the point of generation of the hazardous waste. Generally, the generator must use knowledge of the raw materials used, the process, and potential reaction products, or the results of a one-time analysis to determine the UHCs that may be present in the untreated hazardous waste. The generator must submit a notification for their Doo1, D002, D003, and D012-D043 wastes to the treatment/disposal facility that identifies any UHCs. The permittee will annually verify those UHCs identified by the generator as present at levels above the UTS for which treatment has been performed either on-site or off-site. In the event that the generator does not notify the permittee that there were any UHCs present above the UTS, treatment will be performed for D001, D002, D003 and/or D012-D043, and no verification analysis for UHCs is necessary.
Texas Molecular - Deer Park **Deer Park, Texas** **HW50058001** **Attachment IV.1** **Waste Analysis Plan Issued 21 November 2012** **Issued 21 June 2013, Rev.1** **TXD00719518**		
	Page 1	This WAP describes how TM Deer Park Services Limited Partnership analyzes wastes to be managed in permitted hazardous waste management units. The plan addresses waste characterization for wastes received from off-site as well as wastes generated at the facility. The facility offers treatment, storage and disposal services to generators of hazardous and non-hazardous waste and wastewaters. Disposal of aqueous waste via injection well is the only on-site disposal activity. Other wastes, either in bulk or containers (e.g., inorganic solids, organic solids, liquid organics, etc.) are consolidated, solidified or stabilized as appropriate and sent off-site to authorized facilities for further management or disposal. The facility handles a wide variety of wastes that are liquid, semi-solid, or solid as listed in the permit

	Page 8	5.0 TMDPS-Generated Wastes. Wastes may also be generated on site during facility operations (e.g., treatment residues). For wastes generated on site, the facility completes a hazardous waste determination in accordance with 40 CFR 262.11 and 40 CFR 264.13© at the point of generation. The waste determination includes an evaluation of the following factors. (1) Regulatory exclusions; (2) listed wastes; and (3) characteristic wastes. The waste classification is done by (1) obtaining a chemical analysis of a representative sample of the waste, or (2) using process knowledge to identify hazardous constituents that may be present in the waste or (3) reviewing existing published or documented data or (4) using a combination of waste identification methods. Waste classification is repeated as necessary to ensure that it is accurate and up to date per 40 CFR 264.13(a)(3).
Clean Harbors – Deer Park (Safety-Kleen) 2027 Battleground Road P.O. Box 609 Deer Park, Texas 77536 January 2002 (Revision 2.1) Section IV Waste Analysis Plan		
	Page 21	4.5.3. Verification of Meeting LDR Treatment Standards. For a hazardous waste to be landfilled either directly or after stabilization, the LDR Notification/Certification form accompanying the first shipment must be thoroughly reviewed to ensure that the generator has certified that this shipment meets all the applicable LDR treatment standards required for designated treatment and/or disposal method. In addition, waste shipments will be sampled and analyzed in a frequency as described in Section 5.3 for all the applicable LDR constituents to verify compliance with applicable treatment standards. Due to the long turnaround time of certain analyses, the facility may request a representative sample be sent to a facility approved lab prior to the shipment of the waste for this verification
	Page 24	Stabilization/Landfilling. Wastes from off-site sources to be disposed of by landfilling fall into two categories: wastes that qualify for direct landfilling and wastes that require stabilization prior to landfilling. Direct Landfill. Prior to first receipt of LDR wastes stabilized off-site or wastes which do not require stabilization or treatment onsite, the facility will perform corroborative sampling and analysis on those wastes for all applicable LDR constituents in accordance with 40 CFR Part 268. In lieu of corroborative sampling and analysis, the generator may provide a certification, including analytical result, to the facility verifying the waste meets all applicable LDR standards. Such analysis by the facility or certification by the generator shall be repeated annually if specified by the permit. Additionally, a minimum of 10% of the waste streams received during each calendar year shall be randomly sampled and analyzed for all LDR constituents applicable to that waste stream in accordance with 40 CFR part 268. Records will be maintained demonstrating compliance with the above requirements and will be kept on site and available for review by TNRCC representatives.

• Single grab • Every batch or load treated		Stabilization Prior to Landfilling. During the pre-acceptance procedures, if the waste stream meets the applicable LDR treatment standards for the cyanide and organic constituents but not the metal constituents, the concentrations of metal constituents will be evaluated for stabilization requirements. The concentration of metal constituents subject to LDRs will be used to determine the capability of the facility's stabilization process to reduce leachable metals concentration to meet applicable LDR treatment standards. In addition, a sample may be obtained for laboratory stabilization study if necessary. The purpose of this study is to experimentally determine the ratio of admixes to waste, at which the stabilized material can meet all the applicable LDR metal treatment standards as well as the Paint Filter Liquids Test and/or the unconfined Compressive Strength Test requirements. If the facility determines that the waste stream can be successfully stabilized, in accordance with the applicable LDRs, the waste stream will be scheduled for receipt by the facility for stabilization and landfilling. The shipment receiving procedure as described above for direct landfilling will be followed, except the TCLP/metals analysis will not be performed until after the stabilization. Wastes from off-site sources that need to be treated only by stabilization, prior to landfill placement will be stabilized in accordance with the admixes and associated ratios determined by the facility during the pre-acceptance procedure or prior experience with similar wastes. The stabilized waste will be sampled and analyzed for all TCLP metal concentrations as required by applicable LDRs and the Free Liquids Test or Unconfined Compressive strength test (ASTM test Method D 2166) if required by the Permit. If the sampling and analysis results indicated conformance with the requirements of the LDRs and permits, the stabilization waste will be disposed of by landfilling. One sample will be collected and analyzed from each batch of stabilized wastes. A batch is defined as one receiving pan of waste, which is approximately 100 yd3. Before mixing different off-site waste streams for stabilization, the chemical compositions of the wastes streams to be mixed with be thoroughly reviewed for compatibility. If necessary, based on waste compositions, a compatibility test similar to the once included in Appendix A for tank farm wastes will be employed to determine if the incoming waste load is compatible with the residues left in the receiving pan of the stabilization facility and/or other incoming load waste to be mixed together
	Exhibit 12	LDR Notification/Certification Package
	Attachment 2 Page 2	3.0 Perform ash sampling procedures. Collect the ash sample. Use the aluminum scoop. Collect the sample at levels 6-12 inches below the ash surface. Collect ash samples at equally spaced locations within the bin (this will be approximately 2 feet from the side). Collect all four samples from the same side of the bin. Fill two sampling containers, Place no less than four ash samples into each container (2). Fill each container completely to the top. Inspect the ash bin for evidence of "suspect ash", i.e., insufficiently destroyed material such as unslagged glass, discolorations, capacitor fluff, etc. Collect a separate "grab" of suspect ash (in addition to preceeding samples). Place into a sample container and label.

		Perform filter cake sampling procedures. Every filter cake bin is to be sampled. Collect each sample at levels of 6 to 12 inches below the filter cake surface. Use the designated aluminum scoop. Location of the sample with respect to the length and width of the bin is not critical due to the thorough mixing action that takes place within the scrubber water treatment system. Label each container with the necessary information
US Ecology Texas Robstown, Texas HW50052001 WAP dated April 15, 2016 TXD0694552340		
	Page 1	This WAP has been developed to comply with the regulatory requirements of 40 CFR 261.13 as adopted by the Texas Commission on Environmental Quality (TCEQ) in 30 TAC 335.152(a)(1). The plan describes the procedures employed to obtain the necessary waste information to treat, store, or dispose of hazardous and non-hazardous wastes in accordance with applicable state and federal requirements and permit provisions. All regulatory provisions referenced in the AWAP which are later amended are adopted out right. The facility provides generators with waste disposal capabilities in a secure landfill as well as storage and treatment options. Treatment capabilities typically include: stabilization, microencapsulation, macroencapsulation, chemical oxidation, chemical reduction, deactivation, solidification, neutralization, mechanical processing (i.e., sorting/size reduction/crushing); and/or oil reclamation facility including thermal desorption. The facility accepts a wide variety of hazardous and non-hazardous wastes in numerous combinations and matrices.
	Page 4	2.5 Land Disposal Restrictions (LDR) Notification/Certification Form. LDR notification/certification forms are required for both off-site and on-site generated wastes subject to 40 CFR 268 LDR standards. Generators may use their own forms as long as they meet the regulatory requirements of 40 CFR 268.7(a). Copies of these forms will be maintained as part of the facility's operation record until closure of the facility
	Page 5	2.7 Samples for Treatment Design Mix (Recipe) Determination. Samples may be required during the characterization process to determine a waste stream's amenability to treatment. Section 3.2 of this plan describes the procedures followed to determine the proper waste treatment recipe.
	Page 5	3.1 Review of LDR Waste Streams. The applicability of the LDR standards to a potential waste stream is determined through review of the information provided by the generator or authorized agent, including a LDR notification/certification form. If a waste stream is determined by the generator or authorized agent to be compliant with 40 CFR 268 treatment standards, a certification that the waste stream complies with applicable treatment standards

		must be provided as part of the waste profile information and analytical demonstration may be required. A pre-shipment sample may be required to sample for LDR verification. The pre-shipment sample must adhere to the standard procedures for quality assurance and quality control, e.g., proper labeling, preservation and packaging techniques, etc., and be accompanied by a Chain of custody form. Certification must be updated when the verification testing results or a generator notification indicates potential changes in the waste characteristics. Wastes may be accepted for land disposal without further treatment if all applicable treatment standards are met or if subject to a case-by-case extension, exemption or national capacity variance. Otherwise, the waste stream must be evaluated in accordance with Section 3.2 Section 3.2 Review of Waste Streams Subject to Treatment. Information submitted by the generator or authorized agent is evaluated to determine a waste stream's amenability for treatment. To confirm the treatment conditions defined during the pre-acceptance evaluation, a treatability study will normally be conducted prior to waste treatment. This will establish a treatment design mix (or recipe) that assures the process tolerance limits (I.e., LDR treatment standards) will be met for the waste that is received. If the waste stream is determined to be an acceptable candidate, the generator may submit a representative sample of the waste to the facility. This sample is typically used to determine the proper waste/reagent ratio required for treatment to meet LDR standards. Successful recipes will be developed prior to approval of hazardous wastes that will not be blended with other wastes prior to treatment or each batch of stabilized waste will be tested. Historical information on similar waste streams and treatability studies are also used to develop applicable recipes. For smaller volume hazardous wastes, commingled hazardous wastes or other highly variable hazardous waste, a treatability study may not be required and the treatment design mix may be based upon information obtained during the pre-acceptance evaluation. The procedures employed in the selection of the successful treatment recipe generally follow the steps described below: 1) the sample may be divided into portions, one of which is analyzed by the laboratory to determine which constituents or characteristics require treatment to meet LDR standards; (2) The other portions of the sample are stabilized using different waste/reagent ratios to develop a treatment recipe. The recipe is considered successful when the treated waste meets all applicable LDR standards; (3) the results of the successful treatment recipe are documented in the facility's operating record and used to treat subsequent shipments of the waste to the facility. This documentation may be in an electronic format
	Page 16	4.2.2 Frequency of Analysis. Representative samples will be collected for fingerprint analysis purposes from each waste shipment accepted at the facility. If multiple shipments of the same bulk waste stream are accepted during any one operating day, the sampling frequency

		may be reduced to one sample per every tenth load
	Page 18	5.0 Post Treatment Testing. Post treatment testing is conducted to confirm waste has been properly treated to meet applicable LDRs prior to landfill disposal. The General Manager is responsible for overall implementation of the post treatment testing program. This plan includes procedures for the determination of free liquids in solidified wastes as described in Section 5.1 and LDR confirmatory testing as described in section 5.2
• Other Type of Testing Frequency (First batch and at least once per year thereafter)	Page 18	5.1 Determination of Free Liquids. In accordance with 40 CFR 264.314(b), the Paint Filter Liquid Test (Method 9095B as described in "Test Methods for Evaluation solid Waste: Physical/Chemical Methods," EPA Publication SW-846) is conducted on waste treated solely to solidify free liquids. The waste must pass a Paint Filter Liquid Test to confirm free liquids are no longer present prior to direct landfill disposal. If a waste stream does not pass a Paint Filter Liquid Test, it must be treated again until a passing result is achieved. 5.2 LDR Waste Conformational Testing. LDR conformational testing is conducted on both waste stabilized at the facility, and the desorber solids generated by the TDU to confirm achievement of 40 CFR 268 applicable standards. Samples are collected from the first batch of each hazardous waste stream treated by stabilization at the facility and at least once per year thereafter. Desorber solids are classified by the type of waste streams that are being processed with the TDU. OBHW tank bottoms have consistent organic chemical constituents and treatment conditions and are generally considered a single waste stream. If a particular generator waste stream is requested for processing in the TDU that varies in its chemical constituents or LDR treatment criteria a new waste stream group shall be established for it separates from OBHW tank bottoms. For desorber solids that will be land disposed in the facility landfill, these will be managed in batches for LDR verification sampling. Samples will be collected from each batch; as positive successful passing results are achieved the batch size will be gradually increased as follows. The batch size will begin as one day. One container from each of the first three days of operation of desorber solids from a waste stream group such as tank bottoms are sampled for LDR. If all three day-samples pass the LDR criteria demonstrating that the TDU process is in control for that waste stream group going forward, then the batch size will be increased to ten days, and sampling frequency is reduced to one sample in ten days. If three in a row of these one-in-ten-day batch samples pass, then the frequency is reduced to one-in-twenty-days. When a day-sample container sample from a waste stream group fails, the batch size is reduced to daily and sampling frequency is reset to one container sample per day until three day-samples in a row pass for that waste stream group indicating that the reclamation process has returned into control. Desorber solids that fail conformational sampling will be reprocessed in the TDU or processed by other LDR compliant technology such as chemical oxidation in the USET stabilization units. All containers

• Other type of testing frequency (infrequent shipments test every batch)		generated in a batch will be held in short term storage pending receipt of lab results for that batch. The sampling frequency may be increased on waste streams that exhibit variable characteristics, as determined necessary by the technical reviewer(s). If the stabilization recipe developed for a particular waste stream (e.g., infrequent shipments) did not account for potential waste variation through the use of independent samples, each treated batch will require testing to ensure that the treatment standards are met.
	Page 23	10.0 Waste profile re-evaluation. A waste profile approval for hazardous waste is effective for one year. Waste will not be accepted after the expiration of the profile without proper renewal and approval documentation. For non-hazardous wastes, the reviewer has discretion to review and approve profile analysis for up to three years. In accordance with 40 CFR 264.13(a)(3), a waste profile analysis will be repeated as necessary to ensure that they are accurate and up to date. At a minimum, waste profiles will be re-evaluated when the generator notifies US Ecology that the process generating the waste has changed or when results of the waste stream verification program indicate the waste profile is not representative of the waste stream to be received.
Waste Control Specialists LLC Andrews, Texas Waste Analysis Plan February 2004 (Revised July 2004). TXD9880888464		
	Page 1-1	The purpose of this WAP is to document the necessary sampling methodologies, analytical techniques, and overall procedures which are undertaken for hazardous wastes (hereinafter "waste")) which enter the WCS facility for treatment, storage and/or disposal. The WCS facility stores wastes in bulk and small containers (also referred to as bins and drums, respectively) and treats waste by stabilization and landfills suitable wastes
	Page 3-6	Stabilization treatment studies are run to determine if a waste is amenable to stabilization and to determine the appropriate reagent to waste ratio
	Page 4-1	4.1 Procedural Requirements. For each new waste stream that is a candidate for on-site management, except where noted herein, the following procedures are implemented. WCS will obtain. Pertinent chemical and physical data and when appropriate, representative sampling information and certification on the WPS. A representative sample if required and

		available. LDR notification/certification and/or data. Other supporting documentation as appropriate.
• Other Type of Testing Frequency (current and periodic or as needed)	Page 6-1	Existing and anticipated process operations at the facility for which current and periodic sampling and analyses are important include treatment, including stabilization
	Page 6-2	6.2 Treatment and transfer operations. This section discusses process analyses associated with hazardous waste treatment operations at the facility. In addition, transfer of materials for off-site disposition is addressed, since this process involves bulking of waste materials to meet the receiving facility's specifications. The treatment sampling and analysis program may be divided into three segments, each with a specific purpose. (1) Pre-treatment analyses confirm the waste falls within the selected process design and allow adjustment of the process operational conditions during treatment; (2) In -process analyses are performed, as necessary, to monitor treatment progress; and (3) Post-treatment analyses confirm successful treatment and that the characteristics of the process effluent are such that it can be sent to the next step (disposal, treatment), based upon relevant constraints. Process residues for LDR wastes will be analyzed and/or evaluated as needed against the appropriate treatment standards or prohibitions. Any residues or waste sent off-site for disposal or further management will have the appropriate notification and/or certification form.
	Page 6-4	6.2.2. Stabilization. The term "stabilization" is used in its generic sense to mean the treatment of a waste material to make it physically and chemically stable. In this sense, it consists of those processes which make the material pass applicable LDR standards or other applicable standard(s). In this process, waste is treated to meet LDR (e.g., elimination of free liquids, chemical and/or physical stabilization to remove or immobilize hazardous constituents, oxidation, microencapsulation, ma, etc…) or to meet other appropriate requirements (e.g., permit or regulatory requirements.) Pre-treatment analyses consist of test necessary to ensure the wastes can be treated to meet the applicable treatment requirement. In-process analyses are generally not required. Post-treatment analyses are performed, as necessary, to ensure restricted wastes meet applicable treatment standards.
• Other Type of Testing frequency (periodic basis - first 2 batches	Page 6-4-5	6.2.2.1 Wastes Treated on-Site. Certain wastes are treated on-site to meet specified treatment standards, most notably the treatment standards of 40 CFR Part 268 regarding LDRs. Typically, WCS requires a representative sample of the waste prior to on-site management. The waste sample is then subjected to a stabilization treatability test, in which bench scale treatment of the waste is conducted with one or more reagents to determine an acceptable

and at least once a year thereafter. May be increased if waste shows variable characteristics)) • Post treatment storage (in storage units)		recipe by which the waste is treated (separately or along with other wastes) to pass the required standard(s). Shipments of that particular waste are then treated according to the recipe determined to be capable of attaining the applicable treatment standards (s). In some cases, it may be appropriate to create recipes after acceptance, but prior to treatment (e.g., batches of mixed waste streams, etc.) A treatment certification will be made for each batch treated. All wastes that require removal of free liquids prior to waste disposal will be subject to post-treatment testing using the paint filter Test to verify that the treated waste will not release liquids when landfilled. Verification testing of these wastes will be conducted at a minimum once per batch. Wastes that require treatment to alter or chemically immobilize waste constituents will be subject to post-treatment testing using TCLP/total constituent analyses to verify that the treated wastes meets the applicable concentration-based treatment standards. Initial testing is conducted as part of the pre-acceptance process or prior to the treatment of the initial batch of waste received; as noted above. Since wastes are treated based on a developed recipe, they are subject to verification testing on a periodic basis. For each hazardous waste stream treated at the facility, verification samples are collected form the first two batches of waste treated at the facility and at least once a year thereafter. The sampling frequency may be increased on waste streams that exhibit variable characteristics, as determined necessary by the technical reviewers. Treated wastes may be staged in storage units pending results of verification analyses, if applicable. If post-treatment analyses determine a treated batch does not meet applicable standards, the waste will be retrieved for re-treatment or off-site management. Before mixing different off-site waste streams for stabilization, the chemical compositions of the waste streams to be mixed will be thoroughly reviewed for compatibility. If necessary, based on waste compositions, the commingled Waste Compatibility Test identified in Table 3.1 will be employed to determine if the wastes can be safely commingled. Compatible wastes may be commingled if the reaction between the wastes can be controlled in accordance with 40 CFR 264.17. Microencapsulation and macroencapsulation (defined at 40 CFR 268.45) are considered a form of stabilization. In some cases, it is advantageous to macroencapsulate materials (e.g., “debris”) subject to this standard in the landfill. The debris is placed in a suitable final location (e.g., in the forms, etc.) within the landfill and macroencapsulation is performed in-place with the selected reagent(s) or material (e.g., HDPE, LDPE, etc…)
	Page 6-6	6.2.2.2 Wastes Meeting the Treatment Standards upon Arrival. WCS receives waste which meets applicable treatment standards that either has been treated by the generator, a

		treatment facility, or meets the standard as initially generated. These shipments must be accompanied by a proper notification and certification or, if determined to meet the standard by the WCS, WCS may complete the certification. Wastes I this category may be analyzed for conformance with the treatment standards during the pre-acceptance review, during the load acceptance review, or when WCS believes the waste may no longer meet the standard
	Page 6-7	6.3 Landfill Disposal. WCS's sampling and analyses program is an integral part of this phase of the operation as the results serve to evaluate compliance with permit constraints, land disposal restrictions, and determine safety constraints. Landfill disposal operations generally require only pre-disposal analyses. Wastes to be landfilled are typically subject to the fingerprint Analyses for pre-acceptance samples and incoming waste shipments. Wastes that are subject to the LDRs as generated and are treated to meet the LDRs prior to shipment to the WCS facility will be subject to conformance testing to assure the wastes are in compliance with the applicable treatment standards, in accordance with 40 CFR 268.7(c)(2). Conformance testing of these wastes will be conducted on the pre-acceptance samples and at least once every 18 months as part of the waste re-evaluation
	Page 7-1	7.1 Sampling Program. Sampling methodologies are described in Section 2.0 and Table 2.1 of this WAP. The selection of the sample collection device depends on the type of sample, the sample container, the sampling location and the nature and distribution of the waste components. In general, the methodologies used for specific materials correspond to those referenced in 40 CFR 261, appendix 1. The selection and use of the sampling device is supervised or performed by a person thoroughly familiar with the sampling requirements. Sampling equipment is constructed of non-reactive materials such as glass, PVC plastic, aluminum, or stainless steel. Care is taken in the selection of the sampling device to prevent contamination of the sample and to ensure compatibility of materials. For example, glass bottles are not used to collect hydrofluoric acid wastes
	Table IV.C. Page 2	Sampling and Analytical Methods Sampling Location: Container storage units, stabilization building, railcar pedestal unloading building, Sampling Method: Scoop, coliwasa, trier, shovel. Frequency: First 2 batches; min 1/year thereafter. Parameter: Post Treatment verification (TCLP/Total constituent Analyses (TCA)) metals and/or organics as appropriate).
The Dow Chemical Company, Texas Operations (Dow) at Freeport, TX WAP June 6, 2005		
	Page 1-1	This WAP details the procedures that are used by Dow to comply with the requirements specified under RCRA for hazardous wastes and the TNRCC requirements for nonhazardous wastes. This section provides overview-type information for the facility as well as the regulatory context of the WAP
	Page 2-1	2.0 Waste Properties and Rationale for Evaluation. Sections 2.1 through 2.6 provide

		information on the waste properties and process for evaluation and characterization. Land Disposal Restrictions (Section 2.4)
	Page 2-5	Land Disposal Restrictions. The LDRs specify the level of treatment or specific treatment technology, on a waste code basis, that must be achieved prior to placing hazardous wastes on or in the land. The treatment standards specified in 40 CFR 268.40, as well as the Universal Treatment Standards (UTS) contained in 40 CFR 268.48, detail the level of treatment needed to meet LDRs. Dow utilizes the waste characterization process for wastes destined for landfill to determine applicable treatment standards, UTS limits, and other LDR requirements and assigns EPA waste codes at the point of generation. If after generation, a RCRA characteristic waste is "decharacterized" the waste codes assigned at the point of generation are still evaluated to determine compliance with LDR requirements. In addition to meeting the numeric LDR treatment standards, Dow maintains compliance with other LDR requirements concerning "impermissible dilution" underlying hazardous constituents in characteristic wastes, metal-bearing wastes, and the alternative treatment standards for debris and contaminated soils. After evaluation of the waste at its point of generation, Dow evaluates the appropriateness of treatment so that on-site treatment will meet LDRs. For example, Dow evaluates waste streams which may be inorganic, metal-bearing waste streams (e.g., D004 through D011) and, as a result, inappropriate for treatment in the rotary kiln incinerator. Some of these metal-bearing waste streams currently have specific prohibitions (e.g., high-mercury inorganic subcategory of D009) under the LDRs. The inorganic metal-bearing RCRA wastes hazardous due to TCLP toxicity prohibitions developed under Phase IV LDRs. If evaluation of the waste determines that processing is prohibited by the permit or DOW does not have the appropriate treatment technology specified in the LDR for treatment of the waste, the waste will be treated at an authorized off-site facility. While the treatment and/or disposal method(s) used for a particular waste stream may vary, all hazardous waste debris or contaminated soils subject to LDR treatment levels must meet those levels prior to land disposal. Many of the wastes managed on-site by Dow are treated in the rotary kiln incinerator and ash and filtercake is subsequently disposed of in an on-site landfill. If the ash and filtercake does not meet LDRs after incineration, it is further treated by stabilization to meet LDRs. Stabilization involves adding a stabilizing agent to bind up the contaminants so that the LDR standards are met for applicable contaminants. Some waste however may meet LDR treatment levels at the point of generation and can be disposed of directly in a landfill. Other on-site wastes may be treated by stabilization to meet treatment levels or on-site waste may be treated in <90-day storage units in accordance with 40 CFR

		262.34 and 268.7(5) Hazardous debris wastes are managed in accordance with the standards in 40 CFR 268.45. In addition to a number of indirect activities needed to meet with LDRs (e.g., making sure storage limitations are met, making sure that impermissible dilution does not occur, maintenance of records at the facility, etc.) Dow performs several direct waste evaluation procedures to meet LDRs. These direct procedures are reflected in later sections and can generally be summarized as follows. (1) Evaluation of Wastes for LDR Treatment Levels (Section 2.4.1) - this section describes the process used by Dow to evaluate wastes, prior to land disposal, so that LDR treatment levels are met.; (2) Assignment of Waste Codes (Section 2.4.2) - this section describes how, during waste characterization, all waste codes applicable to the waste stream must be determined and then assigned to that waste stream to ensure that appropriate LDR treatment standards are met.; (3) Notification and certifications (Section 2.4.3) - this section describes how LDR notifications and certification for waste shipments are utilized in the waste evaluation process.
	Page 2-6	2.4.1 Evaluation of Wastes for LDR Treatment Levels. To evaluate wastes for compliance with LDRs, Dow, using a combination of testing and application of process knowledge, assesses waste streams against treatment standards applicable to the waste codes associated with the stream. An overview of the decision-making process used to assess compliance with LDR treatment levels is presented as figure 5. An overview of hazardous debris is presented as figure 6.
• Other (representative grab sampling) • Other Type of Testing Frequency (10 grabs, annually thereafter)	Page 2-6	Incineration Residues. …..The analyses of the ash and scrubber water filter cake residues from campaign and non-campaign wastes are analyzed according to the same procedures. Ten consecutive grab samples are collected of ash and filtercake and analyzed for compliance with the LDR treatment levels for that particular waste. If they consistently meet the LDR standards for the ten samples, then they are landfilled and the analysis frequency is reduced to once per year. If the ash and/or filtercake does not meet the LDR standards, it is stabilized and ten additional grab samples are collected from the stabilized material. If the stabilized material consistently meets the LDR standards for the ten samples, then the waste is landfilled and the analysis frequency is reduced to once per year. If an annual sample fails to meet the LDR standards, ten consecutive samples are again collected and analyzed for compliance before reverting to annual sampling. If the waste cannot meet LDR standards after retreatment, the method used to retreat the waste will be evaluated to determine if operations need to be modified to consistently meet with LDR treatment levels. After retreatment and reassessment of the treatment method, if needed, Dow must then meet LDR levels on the next ten samples of waste generated to demonstrate compliance with LDR treatment levels. Once compliance is demonstrated through meeting LDR levels on the ten consecutive samples, annual testing will be re-implemented.

		Analytical testing for batches of wastes associated with campaign and non-campaign wastes is collected using a representative grab sample from the batch. Each sample of the ash and filtercake is analyzed for applicable LDR constituents
	Page 2-7	Waste going directly to landfill. Compliance with LDR standards for wastes going directly to landfill is based on the characterization of the waste and process knowledge/analytical data to determine if the LDR standards are met per 40 CFR 268.40 or 268.48. Debris wastes are managed in accordance with the standards contained in 40 CFR 268.45. contaminated soil may be managed in accordance with the alternative treatment standards of 40 CFR 268.49. These procedures are shown in more detail in figures 5 and 6.
	Page 4-1	4.0 Sampling Methodology. The objective of sampling is to safely collect a representative sample of a waste stream. There are three basic components of a good sampling plan which are addressed within this section: (1) sampling procedures - Section 4.1; (2) quality assurance/quality control; and (3) health and safety procedures. 4.1 Sampling Procedures. The sampling strategies utilized by Dow depend on the variability of the waste and the data quality objectives to be achieved. Grab and/or composite samples may be collected to ensure that the samples being collected are representative of the waste stream. The types of samples collected by Dow for waste analysis, along with the general rationale for when each type is used, is presented below: (1) grab samples - Grab samples are collected for waste streams that are known to be relatively homogenous, for determining waste variability, and for determining LDR compliance for non-wastewaters. 2) composite samples - composite samples are collected when average concentration estimates of a waste stream are desired or when determining LDR compliance for wastewaters. It should be noted that the use of composite sampling for analysis of volatile compounds is not appropriate. Selecting appropriate sampling equipments is a function of the physical and chemical properties of the waste as well as any potentially site-specific conditions relating to the waste, which may need to be considered…..
Veolia ES Technical Solutions Port Arthur, Jefferson County, TX TXD000838896 Waste Analysis Plan (Attachment IV.D) June 2002; Revised January 2004		
	Page 1-1	The purpose of this WAP is to document the necessary sampling methodologies, analytical techniques, and overall procedures which are undertaken for hazardous wastes (hereinafter "waste") which enter this facility for treatment, storage and/or disposal. OES strives to maintain, at all times, compete compliance with the hazardous waste regulations. Because new testing requirements, such as those promulgated under the LDRs,

		often become effective prior to the time WAP revisions can be formally made and approved by all appropriate agencies, it is impossible to have in place an approved WAP meeting all the conditions of the immediately effective requirements. In light of these facts, the facility will have in place a written protocol specifying the new testing and frequency requirements prior to processing of the regulated waste. The facility may also periodically revise the protocol to reflect scientific advances, additional land ban requirements, and/or other pertinent factors. If WAP revisions are necessary because of a new regulatory rule, they will b submitted within 60 days after the effective date of the rule, or as specified in the regulations.
	Page 2-3	Process in-line sampling. The variability of the waste stream at any point in a treatment process is first determined from knowledge of the process producing the waste, or from the results of a preliminary investigation of the waste stream. Sampling frequency is based upon sampling from appropriate in-line sampling points in the process stream and potential sampling compositing for analysis. The samples can vary in size, depending on the flow rate of the stream
	Page 6-2	6.2 Treatment Operations. The treatment sampling/analysis program may be divided into three segment, each with a specific purpose: (1) Pre-treatment analyses confirm that the waste falls within the selected process design and allow adjustment of the process operational conditions during treatment; (2) In-process analyses are performed to monitor treatment progress; and (3) Post-treatment analyses confirm successful treatment and that the characteristics of the process effluent are such that it can be sent to the next step (disposal, or further treatment), based upon permit ot process constraints. Residues resulting from the on-site treatment of land disposal restricted wastes will be analyzed and/or evaluated, as needed, against the appropriate treatment standards or prohibitions. Any residues or waste sent offsite for disposal or further treatment/storage will have the appropriate notification and/or certification form in accordance with 40 CFR Part 268.
	Page 6-4	6.2.2 Stabilization. Stabilization is a process by which waste can be treated to remove free liquids, producing a mixture that has (1) no free liquids; (2) sufficient structural integrity for the landfill and (3) meet LDR requirements. An overview of the general analytical approach is shown in figure 6-3. 6.2.2.1 Stabilization of Wastes Containing Free Liquids. In this process wastes that are not land disposal restricted are treated solely to stabilize free liquids in order to prevent spills during handling. Pre-treatment analyses for these wastes consist of the "Mandatory analyses" performed on the incoming shipments. In addition, Supplemental analyses may be requested by facility management to further evaluate the waste. 6.2.2.2 Stabilization of Land Disposal Restricted Wastes. In this process certain LDR waste are stabilized to meet the appropriate stabilization treatment standard. For the purposes of this discussion, treatment will include, at a minimum, stabilization for the waste and, in some instances, will include a pretreatment step prior to stabilization. The pre-treatment may include using other reagents.

• Single grab sample • Other Type of Testing Frequency (Initial load,thereafter minimum frequency of once per quarter)		A portion of the pre-acceptance or waste receipt sample will be stabilized and analyzed according to the LDR stabilization evaluation test to demonstrate that the waste can be stabilized to the appropriate treatment standard and to establish the mix ratio of reagent(s) to waste that will be used. After receipt and any prior processing required (e.g., shredding), the LDR waste shipment will be sent to the stabilization building for stabilization. The mix ratio established by the LDR stabilization evaluation test will be used to stabilize each shipment of that LDR waste. A post-treatment analysis will be conducted after the reagents are added to assure that the process continues to be effective in meeting the treatment standards. The residues generated from the treatment of LDR wastes will be analyzed and/or evaluated against the appropriate prohibitions and/or treatment standards in accordance with 40 CFR part 268.7. A post-treatment grab sample will be obtained for corroborative analysis after stabilization of the initial waste load and thereafter at a minimum frequency of once per quarter
	Page 6-9	6.3 Final Disposal. 6.3.1 Landfill Disposal. A sampling/analyses program is an integral part of this phase of operation. The results of this program serve to evaluate compliance with site permit constraints, confirm disposal method selection, and determine safety constraints. For wastes destined for direct landfill or stabilization prior to landfill, the LDR notification/certification form accompanying the first shipment will be closely reviewed to ensure the generator has certified compliance with the LDR standards or has identified which codes require treatment. OES will conduct corroborative sampling and analysis in accordance with the parameters and frequency specified in table IV.C to ensure the LDR notification/certification has been accurately completed. In lieu of corroborative sampling, OES may utilize the generator's certification accompanied by appropriate analytical results. At a minimum, this analysis must be repeated on a quarterly basis. For wastes that meet the organic LDR treatment standards but require stabilization for metals,

		OES will develop a specific recipe for the waste based on the particular metal(s) requiring stabilization, the overall composition of the waste, and operating experience. The recipe for stabilization will be developed and verified by conducting post treatment TCLP analysis to confirm compliance with the metal LDR treatment standards, a Paint Filter Liquids Test to ensure the stabilized waste contains no free liquids, and an unconfined compressive strength test. Once a recipe has been validated, post-treatment testing of stabilized waste batches will consist of performing the Paint Filter Test on each waste batch. All wastes destined for the on-site landfill will be visually inspected upon receipt to confirm that no biodegradable sorbents, such as saw dust, ground corncobs, or rice hulls have been added to the waste. Landfill disposal operations generally require only pre-disposal analyses. Wastes to be landfilled will be subject to the "Mandatory analyses" for pre-acceptance samples and incoming waste shipments and, where necessary, the paint filter test. An overview of the general analytical approach is shown in Figure 6-5.
EPA Region 8		
Veolia ES Technical Solutions, LLC **PO Box 158** **5295 South Garvey Road** **Henderson, Colorado** **COD980591184** **WAP Date: March 2006; August 1, 2015** **COD980591184**		
	Permit: General Facility Conditions.	Land Disposal Restrictions. The Permittee must comply with all applicable requirements of 6 CCR 1007-3 Part 268 and 40 CFR Part 268. Compliance includes, but is not limited to the following: (1) The testing of treatment residues in accordance with Sections 268.7(b)(1), (2), and (3).; (2) The certification requirements for treatment facilities specified in Section 268.7

	Revised Permit August 2015. Page ii-15a	(b0(5); (3) The notification requirements for treatment facilities specified in Sections 268.7)b)(4),(6), and (7). And (4) The hazardous waste storage prohibitions specified in Part 268.Subpart E.
	WAP Page 9	Document Verification. LDRs. Waste shipment and pre-acceptance approval information that determine if the waste stream is subject to LDRs will be reviewed. A verification will be made that the waste profile and the LDR notification are current for the waste shipment
Clean Harbors Deer Trail COD991300484 Waste Analysis Plan Permit Renewal Application October 2017		
	WAP - 1	"Batch" refers to waste treated in the treatment basins. The contents of a treatment basin is considered a batch. A batch may consist of one or more different waste streams and may have one or many waste containers going into it. The contents of a batch are normally mixed together and then treated by the addition of various treatment chemicals and reagents. Even if the material is moved to several other containers for curing, it is still considered one batch.
	WAP-1	"Campaign" refers to a series of batches containing similar wastes treated using similar treatment formulas. A campaign may be subject to different sampling frequency criteria than an individual batch, based upon statistical confidence in treatment effectiveness.
	WAP-3	The following waste management activities occur at the Highway 36 Land Development Facility: --Storage and/or accumulation of waste materials either for on-site treatment or disposal, or for subsequent shipment to other permitted TSDFs. --Treatment of liquid, sludges, solids, and debris --Secure landfill disposal of non-liquid waste materials. --In transit staging of waste materials which are either being shipped to CH Deer Trail, or are being transported to other off-site waste TSDFs.
• Other (random samples) • Other Types of Testing Frequency (determined by CDPHE inspectors not to exceed 1 in 10 basins and/or	WAP-15	Random Sample Program. Random samples identified by the CDPHE inspectors will be analyzed for compliance with LDR, waste identification, and waste certifications. Random samples will be selected at the frequency required by CDPHE inspectors. The frequency will not exceed 1 in 10 basins and/or 10% of campaigns leaving the Treatment building or 1 in 10 trucks of incoming direct disposal waste streams. Special Analysis: In addition to the analysis above, wastes accepted for the following units shall be sampled and analyzed for the following additional parameters. Treatment in the Treatment building. Compatibility with treatment reagent: A sample of the waste shipment will be mixed with treatment reagent to determine waste -t-reagent and reagent to reagent compatibility. Compatibility with Commingled Waste: If a waste is to be

10% of campaigns leaving treatment building or 1 in 10 trucks of incoming direct disposal waste streams)		mixed with other waste already onsite, then a sample of the waste shipment shall be mixed with a sample of the wastes with which it is to be evaluated based on waste knowledge.
• Single grab • Other Type of Testing Frequency (test 3 campaigns, proceed to 1 in	WAP-17	On-site Waste Transfer. For treatment in basins, a representative treatment verification sample shall be obtained from a grab sample from the basin. Analytical Requirements. The parameters selected for treatment verification sample analysis will be dependent upon the constituents for which the waste was treated. The analysis performed on the treatment verification sample must verify that all aspects of the treatment were successful and must document that disposal of the waste will comply with all Permit and regulatory requirements. The analytical requirements do not apply to debris as defined in the regulations. The sample will be analyzed for any or all of the following as applicable: Free liquids, load bearing capacity, pH, ignitability, Gas Evolution/reaction with pH change, Land Disposal Restrictions - specific constituents for which waste was treated, HDPE incompatible constituents. The analytical results obtained from the above analysis shall be evaluated to determine the success of the treatment. If analytical results indicate the failure of a treatment standard, the Permittee will either re-process the waste or the waste will be sent to an appropriate permitted treatment or disposal facility. The analytical results and the evaluation shall be documented in the operating record. After statistical analysis and consideration of all other applicable aspects of the analytical data for verification of treatment of LDR wastes and approval of this analysis by the Department, the Permittee may implement the following frequency for testing the Treatment Campaign samples. If the test results from the treatment of three successive like treatment campaigns demonstrate that all three treatment campaigns meet the required treatment standards, then one verification sample in every 20 like treatment campaigns will be performed. Like treatment campaigns are those that treat the same constituents using the same treatment formulation.

20 campaigns with same treatment formulation.		If the analysis of the one in 20 verification sample demonstrates that the treatment of that campaign did not meet the applicable treatment standards, the specific treatment formulation will be re-evaluated, and if necessary, adjusted so the treated waste will meet the applicable treatment standards. The Permittee must again demonstrate three successive like treatment campaigns meet the applicable treatment standards using the revised treatment formulation and obtain approval from the Department prior to returning to the 1 in 20 frequency for testing.
Energy Solutions, LLC **Clive, Utah** **WAP Issued April 4, 2003; Revised August 7, 2014** **UTD982598898** **This is a very detailed permit, please refer to this website for the complete WAP.** **https://deq.utah.gov/legacy/businesses/e/energysolutions/permits/waste.htm**		
• **Post treatment storage (put piles)**	Page 13	Reconciling analytical data and discrepancies from results required by Conditions V.3 and V.6. d. If the results show that treatment is required prior to disposal, the Permittee shall arrange for such treatment. If treatment onsite cannot be arranged, the waste shall be sent to an appropriate treatment, storage, or disposal facility or returned to the generator, based on the generator's instructions. e. <u>While awaiting the first round of sampling results, shipments shall not be treated or disposed. However, for the annual or semi-annual confirmation sampling of bulk waste, the corresponding shipment of waste may be kept in the landfill cell provided that the waste is prevented from commingling with other wastes.</u> The waste shall not be covered with other waste prior to the receipt of these results. <u>If the results indicate the waste needs to be treated prior to disposal, it shall be moved to treatment or storage within five calendar days of receipt of analytical results.</u> Wastes tracking shall be conducted in accordance with Attachment III-2 Waste Identification and Tracking. 8. If an analytical discrepancy cannot be resolved, the shipment shall be rejected. Rejected waste shipments shall be returned to the generator or forwarded to an appropriate treatment, storage, or disposal facility, based on the generator's instructions
	Attachment II-1-1	<u>Waste Analysis Plan and Formula Development for Treatment Wastes</u> This plan is an attachment to the WAP and applies to wastes subject to LDRs that are treated at the facility. It describes the additional and alternative waste analysis procedures applicable for wastes to be treated by stabilization. For purposes of this plan, treatment refers to stabilization as described in Attachment II1-3- Waste Stabilization Plan. II. Establishment of a Treatment Formula. The Permittee shall establish a formula for treating waste as follows: The Permittee shall establish and document the following treatment parameters: 1. Composition and amount of treatment reagents as listed in Attachment II-1-2, Approved Treatment Reagents, to be used. 2. Consistency of treatment residues. 3. Measurement and

		documentation of the physiochemical changes to the treatability sample as the result of measured amounts of water and reagents added. 4. Mixing effort applied. 5. Sequence, by amount, of reagents and water as added. 6. Whether a pH adjustment is necessary; and 7. The amount of water required to prepare a slurry. The Permittee shall not add reagents that have known or suspected interference with the proper and accurate determination of any hazardous waste constituent. The Permittee may vary the established formula by up to 10% as long as the dilution factor is not exceeded. III. Quality control of Established formula (See website) IV. Treatment (See website) v. Method for Developing Retreatment formula Should a verification sample indicate that the treatment standards or objectives were not met, the following procedure shall be accomplished: The Permittee shall determine: 1. Which standards were not met 2. Which treatment runs were affected 3. What were the possible causes of the incomplete treatment, and What steps will be taken to remediate the situation.
	Attachment II-1-2	Approved Treatment Reagents Page 3 Note: Treatment reagents shall be selected on the basis of the goals of the treatment process. For example, where inorganics and aqueous slurries are the object of the treatment, such reagents which stabilize inorganics shall be used. Similarly, where organics are to be treated, such reagents, which stabilize organics shall be used. (NOTE: Stabilizing organics is questionable in LDRs). Where both inorganics and organics are the object, co-combination of treatment reagents may be used.
	Attachment II-1-3 Waste Stabilization Plan Issued April 4, 2003 Revised - February 26, 2015	This plan shall apply to treatment of waste at the Permittee's Mixed Waste Treatment Facility using stabilization treatment technologies. 3. The treatment technology referred to as stabilization in this plan involves chemical treatment and stabilization treatment, to decrease the waste's concentration of hazardous constituents through chemical reaction, to reduce the leachability of hazardous constituents in the waste, or both. Depending on the treatment utilized, the following technology codes may apply to stabilization treatment technologies: AMLGM, STABL, CHOXD, CHRED, DEACT, and NEUT.
		Mixed Waste Treatment building: 1. Waste receiver Tank; 2. Liquid waste storage tanks; 3. Sizing screen tank; 4. Primary shredder tank; 5. Secondary/tertiary shredder tank; and 6. Mixer tank No 1.
		III. General Requirements

		Hazardous waste activities for stabilization such as waste receipt and waste transfers may be conducted in the mixed waste treatment building, mixed waste operations building, and mixed waste storage building. Treatment and storage shall be conducted in containers and tank systems in accordance with applicable provisions of this permit. Treatment Run. A treatment run shall be defined as all residues of one waste stream that are treated using the same treatment unit during one calendar day of operation. Whenever a different treatment system is used for treatment of a waste stream, the initial and subsequent sampling and analytical frequencies shall re-start for that waste stream. Except as designated in III.4.d., different waste streams shall not be processed together in the same treatment run. Different elemental mercury waste streams may be combined for amalgamation treatment as long as treatment is only necessary for metals. The volatile organic content of waste for treatment shall be limited to concentrations that maintain the cancer risk and non-cancer Hazard Index requirements of condition II.T.4 of Module II.
	Page 6	12. Recordkeeping a. the Permittee shall maintain documentation in the Operating Record of stabilization treatment operations and of other requirements in this plan for a period of three years. b. Treatment operation documentation shall include --treatment formula --amount of waste treated --amount of reagents added --dates of treatment (or treatment run number) --operator's names (or initials corresponding to names --tanks used during treatment. --analytical results, and --a certification of treatment based analytical results c. Treatment certifications shall be kept for a period of five years.
	Page 8	Dilution Monitoring Must be less than 2. Weight of waste material to be treated +Weight of water and reagents added to waste material during treatment/Weight of waste material to be treated. If greater than 2 must get approval by Director.
	Page 9	Treatment Operation Requirements (see website for additional information) --Communication Requirement --Prevention and control --Freeboard --Size Control

		--Scaling Factors and Error Range for Treatment --Order and Manner of Additions in the Mixers --Treatment Operation Description and Requirements --Liquid Waste Management --Make-up Water in stabilization LEL Detector (Lower explosives limit) --At least two operators in each operating unit
• Post treatment storage • Other type of Testing Frequency (One sample first 3 runs, thereafter one sample from 10% of runs until 15 runs have been tested, Thereafter one sample from 5% of treatment runs. • Single grab sample	Page 13	VI. Post-Treatment Requirements 1. A curing time shall be designated in the treatment formula. The curing time for a treated waste shall be defined as the amount of time that a waste shall remain in storage, following treatment, prior to disposal or additional treatment. 2. Waste Segregation and Treatment Equipment Decontamination 3. Analytical Treatment Verification --Verification samples shall be taken using a scoop, shovel or other sampling device. Since the material has been thoroughly mixed by this point in the process, no compositing of samples shall be necessary. --The treatment residues shall not be disposed in the Mixed Waste Landfill Cell until analytical verification is completed. --The Permittee shall verify treatment by sampling and analyzing stabilization treatment residues, in accordance with the minimum frequency outlined below using EPA-approved analytical methods performed by a laboratory meeting the requirements in Attachment II-1 WAP. One sample from each of the initial three treatment runs for each formula used on each waste stream THEREAFTER One sample from ten percent of the treatment runs until 15 treatment runs have been tested, THEREAFTER, One sample from five percent of the treatment runs. 4.Disposal Following Verification. Wastes for which verification has been completed, and treatment standards are met, shall be disposed in accordance with the applicable provisions of this Permit. 5. Retreatment. Should the results from treatment verification of the waste indicate that the standards or treatment objectives have not been reached; the waste shall be retreated or re-tested until proper treatment is verified or another method for management is identified.

		Other methods of management may include manifesting the waste to another permitted facility, storing the waste for future management, re-profiling the waste for other treatment, or returning the waste to the generator. Retreatment may use the formula previously used to treat the waste or a new formula may be developed as outline in Attachment II-1-1. If the previously used formula is used to retreat the waste, the waste-to-additive weight ratio for the combined treatment shall not exceed the requirements of condition IV.5 unless prior approval is received from the Director; and The retreated waste residue shall be analyzed for the contaminants that previously did not meet treatment standards. If the waste does not meet the treatment standards after four process verification attempts, the Permittee shall notify and inform the Director of any subsequent management plans for the waste
	Attachment II-1-5	Macroencapsulation Plan (NOTE: see website for complete details on this plan) 2. Definitions: MACRO for radioactive lead solids subcategory or radioactively contaminated cadmium, mercury, and silver-containing batteries (MACRO vault): MACRO with surface coating materials such as polymeric organics (e.g., resins and plastics) or with a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media. MACRO for these subcategories specifically does not include any material that would be classified as a tank or container. MACRO for hazardous Debris (MACRO Capsule, or MACRO Vault); Macroencapsulation with surface coating materials such as polymeric organics (e.g., resins and plastics) or with a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media MACRO Vaults may be constructed directly in the Mixed Waste Landfill Cell in accordance with the applicable requirements of this Attachment. (NOTE: Treatment in a landfill - prohibited) Acceptance Criteria Waste managed as macroencapsulated waste shall meet the definition of MACRO. The following requirements apply to the specific elements of the MACRO definition: “Surface coating materials” --Polymeric organic encapsulating materials (e.g., resins and plastics) shall be used, provided that they are applied to the surface of the material being macroencapsulated. --Materials that are not applied as coatings such as plastic “wraps” are not acceptable as surface coating materials. (NOTE: This would exclude the “burrito wrap”)

		"Jacket of Inert Inorganic Materials" --Encapsulating materials shall be composed of metal or inorganic --the encapsulating jacket shall be chemically and physically stable and chemically inert with respect to the wastes and other materials it may contact within a Mixed Waste Landfill Cell. --Metals or alloys that would be determined by DOT methods to be pyrophoric shall not be used. --Reactive metals or alloys such as those of group IA or IIA of the periodic table of elements shall not be used. --As a microencapsulate, metal jackets shall be in direct surface contact with the waste through lamination, welding, a pozzolanic material pour, a ceramic materials pour, and/or a molten metals pour. --Other inert inorganic materials may be used as jackets. Such inorganic materials shall not be carbon-based compounds or substances. --MACRO using non-metal inert inorganic materials may be held by a mold container only if the container is also not the MACRO jacket. Such metal inorganic MACRO material: --shall be largely monolithic --shall not be susceptible to liquid penetration --shall not be of a crumbly consistency or susceptible to deterioration such as crumbling, spalling, flaking, or cracking. "substantially Reduce Surface Exposure to Potential Leaching media" (NOTE: Please see website)
	Page 4	Verification Requirement for Macroencapsulated Wastes from Off-site sources (NOTE: Please see website) 4. Waste Management for Macro operations (NOTE: Please see website)
	Page 7	Macro Capsules Following waste loading, voids that remain within the MACRO capsule shall be filled with flowable material. Acceptable fill materials include, but are not limited to CLSM, molten LDPE, and dry sand. The fill material used and the inspection showing that the voids are filled shall be documented in the Operating Record. For purposes of this permit, Macro vaults consist of wastes approved for MACRO treatment encapsulated in a monolithic cement-based jacket of inert inorganic materials referred to as Macro Mix. The Macro Mix formulation is proprietary business information. Any change to the approved Macro Mix formulation shall receive Director approval prior to implementation. Unless approved by the Director, each MACRO vault shall have a footprint no larger than 625 ft2, and shall be less than 16 feet tall. (NOTE: See website for additional requirements)

Clean Harbors Grassy Mountain Utah WAP January 31, 2014 UTD991301748		
	Page 1	1.0 Introduction. The following describes the methods that shall be used to manage hazardous waste regulated by the RCRA, waste regulated by the TSCA and waste regulated by the Utah Administrative Code. This plan provides waste management procedures and documents the analyses required to safely treat, store or dispose of the wastes accepted at the facility. This plan describes the following: "….The methodology of determining whether a RCRA waste stream has been treated to ensure compliance with the applicable LDRs, if necessary…"
	Page 3	This WAP establishes the following: ….The frequency with which the analysis of the waste shall be performed to assure that the wastes or treated wastes are in compliance with the applicable treatment standards set forth in R325-13-1 of the Utah Amin. Code which incorporates 40 CFR Part 268.
	Page 4	The WAP is intended to be the primary reference document for all waste analysis performed in conjunction with operation (and closure) of the facility except for groundwater which is covered in Module VII …The WAP addresses the following:…treatment processes (Section 7); Analysis of treated wastes (Section 9) and Fate of treated wastes (Section 10).
• Single grab sample • Post treatment storage (put pile) NOTE: Not sure what this section means, Is one grab sample taken and then two more for re-	Page 35	4.13 Post Treatment Sampling of Waste Treated in Stabilization Tanks. When waste is treated in the stabilization tanks it is mixed with reagents. A sample is then obtained for LDR conformation analysis. Because of the mixing it is reasonable to approach the pile as a mass with no vertical or horizontal stratification. GMF shall follow the sampling methodology stated in R315-13-1 of Utah Admin. Code, which incorporates 40 CFR 268.40(b) by reference, for waste treated at GMF. Any grab sample shall pass the treatment standards before the waste is disposed. When there is any uncertainty in achievement of treatment standards, the Facility shall follow the procedures for re-sampling in Section 4.13.2 of this Attachment (NOTE: There is no section 4.13.2 in the WAP) 4.13.1 Initial Sampling. One grab sample from each batch of treated waste shall be taken. It shall be collected from either the tank after treatment is completed, or during removal from the tank, or from the transport vehicle used to move the waste to the staged "put-pile" location, or immediately after the "put pile" is placed. 4.13.1.1 Re-sampling. Wastes treated in the stabilization tanks and staged as "put piles" to await analytical results, may need resampling for confirmatory (verification) analyses.

sampling if any of these don't meet LDRs then the entire put pile fails and either has to sit for more time (		Resamples shall consist of two grab samples per batch of material placed in the put-pile. If results from the initial sample indicate a failure to meet LDR treatment standards, two resamples shall either be taken to verify the results of the initial sample or the waste shall be retreated. If one or both resamples fail, the waste shall be retreated. If both pass, the facility will determine that the waste meets treatment standards and may be released for disposal
This would be illegal disposal in the landfill) or dig out and re-treat).	Page 44	The following provides information on the stabilization, oxidation, reduction treatment processes. 7.2.1 Process Descriptions. A variety of techniques are used by GMF to treat waste to meet LDR numeric and/or technology standards prior to land disposal. These include pH adjustment and buffering, oxidation, reduction, conversion to insoluble salts, and chemically bonding elements to an insoluble matrix. Technology standards that GMF achieves through this process are: --Chemically fixing (i.e., reducing the leachability) inorganic metal components(s) in a given waste (LDR Technology Standard of STABL). This is done by converting the more soluble metal compounds to less soluble compounds and/or combining the metal compounds with reagents which physically bind them. Depending upon the waste stream and its constituents, oxidation and/or reduction reactions shall be required to achieve the desired results. --Oxidizing and/or reducing a waste stream shall be required to reduce total and/or amendable cyanides or sulfides in a waste to below LDR concentration standards. --Oxidizing a waste stream to achieve the LDR treatment technology standard of "CHOXD" and/or "DEACT" --Reducing a waste stream to achieve the LDR treatment technology standard of "CHRED" --Neutralization: this process could also be used to neutralize a waste stream and meet the LDR Technology Standard of "NEUTR" --One of the immobilization technologies listed in R315-13-1 of Utah Admin. Code which incorporated, 40 CFR 268.45 by reference, shall be used to treat hazardous debris. --Physical sizing of waste, as necessary, is allowed to facilitate stabilization treatment.
• Other Type of Testing Frequency (Tier testing)	Page 45	The following text outlines the approach that GMF shall adhere to when treating wastes to meet LDR standards: 7.2.2. Frequency and Scope of Testing. The facility shall use either Option A, Option B or Option C when treating LDR wastes with numeric LDR standards that are destined for land disposal. 7.2.2.1 Option A. A suitable laboratory shall analytically test each treated waste batch, selected for this option. The resulting analytical data shall demonstrate that the treated wastes meet all applicable treatment standards specified in the Utah Administrative Code which incorporated 40 CFR 268.41,.43,.48 and/or .49 by reference, prior to land disposal of such wastes. 7.2.2.2 Option B. Treatment "recipes" shall be used to establish a ratio between the waste

		and the material or reagent that is to be used to treat the waste so that the LDR numerical treatment standard is met. These "recipes" shall be recorded in the operating record of the Facility. All wastes treated on-site utilizing Option B shall be treated using the appropriate "recipe". Tier testing shall be used as an expression of the statistical confidence of the application of a particular treatment recipe to a particular waste stream. The waste stream shall be consistent in its chemical and physical properties, and the treatment recipe shall be uniformly effective for Option B to be used. Minor changes to the established recipe include allowance for moisture/liquid content of the waste or quantities of the treatment reagents used. These shall be within a 25% quantity variance. The exception to this is cement kiln dust, which varies significantly in regards to its effectiveness. All other reagents shall be within 25% of the established recipe. If there is a failure in meeting the treatment standards at any time, the Facility shall return to Tier 1, if on Tier 2 Treatment Verification, or Tier 3a Treatment Verification if on Tier 3 Treatment Verification, on the next load of the same waste stream that arrives at the facility, following documenting the failure to meet the standards. Waste that has been land disposes in not affected by returning to Tier 1 or Tier 3a. The following procedure and testing frequency shall be followed: --Tier 1 Treatment Verification. Each batch of a treatment waste stream treated with the same recipe shall be analytically tested using applicable test method(s). The resulting analytical data must demonstrate that the treated wastes meet all applicable treatment standards specified in the Utah code, which incorporate the CFR by reference, prior to land disposal of such waste. If the test results from the treatment of nine successive same waste treatment stream batches demonstrates that all nine batches of treated waste of treated waste meets treatment standards, the Permittee shall be allowed to advance to Tier 2 and test one of every five batches of the same waste treatment stream. The Permittee shall not proceed to Tier 2 until the analytical results of all nine batches are verified and determined to have met the LDR standards. Loads of the same waste stream that arrive at the facility, while waiting for the analytical results from the ninth load to be verified, shall be subject to Tier 1 treatment verification. If the Permittee has verified 20 consecutive batches of the same waste stream that has been treated with the same recipe, Tier 2 can be omitted, allowing the Permittee to go directly to Tier 3.
		--Tier 2 Treatment Verification. Tier 2 shall begin with the 10th load, which is sampled. If the next four batches of the same waste treatment stream are treated with the same recipe, they can be land disposed without testing. The 15th batch shall be sampled and analytically tested using applicable test method(s). The resulting analytical data from tis batch shall be required to demonstrate that the treated wastes meet all applicable treatment standards of Utah

		Admin code, which incorporates 40 CFR part 268 by reference, prior to land disposal. The next four batches of the same waste treatment stream that are treated with the same recipe, can be land disposed without further testing. The facility then has the option to proceed to Tier 3. The facility cannot proceed to Tier 3 until the analytical results of the 15th batch are verified and determined to have met the LDR standards. Loads of the same waste stream that arrive at the Facility, while waiting for the analytical results from the 15th load to be verified, shall be subject to Tier 2 treatment verification. If the analytical results indicate that any load tested during Tier 2 Treatment Verification failed to meet the standards, the Permittee shall resume Tier 1 Testing, starting at sample one as indicated on Table C-6. --Tier 3 Treatment Verification. Tier 3 shall begin with the 20th batch being sampled and analytically tested. If the next nine batches of the same waste treatment stream are treated with the same recipe, they can be land disposed without testing. The 30th batch shall be analytically tested using applicable test methods(s). The resulting analytical data from this batch shall be required to demonstrate that the treated wastes meet all applicable treatment standard prior to land disposal. The next nine batches of the same waste treatment stream that are treated with the same recipe, can be land disposed without further testing. If the analytical results indicate that any load tested during Tier 3 testing failed to meet the standards, the facility shall, at a minimum proceed to Tier 3a Treatment verification on the next load of the same waste stream that arrives at the facility. The facility as the option to return to Tier 1 Treatment Verification procedures in the event of a failure during Tier 3 Treatment verification. --Tier 3a Treatment Verification. Tier 3a Treatment Verification is an option if a sample tested and analyzed during Tier 3 Treatment Verification fails to meet the standards. Tier 3a shall require that five consecutive samples be obtained and analyzed. If all five samples consecutive samples meet the treatment standards identified in the Utah Admin. Code which incorporates 40 CFR 268 by reference, the facility may return to Tier 3 treatment verification. --Tier 4 Treatment Verification. If a uniform and homogenous waste treatment stream can be demonstrated as receiving adequate treatment from an established recipe on a consistent basis, a Class 1 permit modification, requiring prior approval may be requested of the Director to further reduce the post treatment verification analysis beyond that of Tier 3. A combination of suitable laboratory post treatment analysis and batch testing can be utilized to demonstrate consistency and uniformity to satisfy this request. Typically, a Tier 4 request will allow a reduction to one batch in every 20, although further reductions may be considered and approved by the Director. 7.2.2.3 Option C. If a total analysis of the waste demonstrates that individual analytes are not

		present in the waste, or that they are present but a such low concentration that the appropriate regulatory levels could not possibly be exceeded, the TCLP test is not required. However, the facility shall provide the total waste analysis and justification of its decision not to run the TCLP test in the operating record.
	From Page 79-80	Tier I: Test Batches 1-10 Tier 2: Test Batch 10; Batches 11-14 no testing Test Batch 15 Batches 16-19 No testing Tier 3: Test Batch 20 Batches 21-29 no testing Test batch 30 Batches 31-39 no testing Test Batch 40 Batches 41-49 no testing
	Page 50	7.3 Treatment of Hazardous Debris. GMF may utilize the following alternative treatment standards for hazardous debris contained in the Utah Admin.Code which incorporated 40 CFR 268.45 by reference. --Any of the "physical extraction Technologies. The procedure for documenting the results of utilizing these standards shall be available upon request. --Any of the "Immobilization Technologies"; or --Any self-implementing treatment authorized in 40 CFR 761.79, may be used to decontaminant, for PCBs, RCRA wastes containing PCBs, or materials containing PCBs
Note: Both of these macroencapsulation are prohibited under RCRA LDRs. The first treatment MACRO in a vault is conducted in a landfill , the second requires a jacket of inert, inorganic material not inert (organic) material.	Page 51	7.4 Macroencapsulation. Macroencapsulation (macro), as an alternative treatment standard for hazardous debris, is defined as "the application of surface coating materials such as polymeric organics (e.g., resins and plastics) or use of jacket of inert inorganic materials to substantially reduce surface exposure to potential leach media". The performance standard for macroencapsulation of debris required that "encapsulating material shall completely encapsulate debris and be resistant to degradation by the debris and its contaminants and materials into which it may come into contact after placement (leachate, other waste, microbes). This is a technology-based standard, and not a numeric-based standard so no sampling and analysis are required on waste that meet the definition of hazardous debris. The GMF is permitted to use two types of macro methods. One involves entombing the waste in a macro vault. The second involves the covering of the waste with a high density polyethylene (HDPE).

		7.4.1. Macroencapsulation in a Vault. A macro vault, consisting of a container (e.g., drums and metal boxes, gondola, roll-off box, or intermodal container) or a pit in the cell, is prepared in the landfill cell. As an alternative, concrete forms may be assembled and used as a macrovault. Wood blocks or other material are placed in the macrovault to keep the debris from having contact with the bottom of the vault. As an alternative, a layer of concrete can be placed in the vault and allowed to begin to cure. The hazardous debris waste stream is then loaded into the macroencapsulation vault. Concrete, or other pozzolanic material, is poured into the vault, assuring that void space is minimized. Void space in the waste stream is filled with inert material to help address structural integrity issues. This is accomplished with the use of flowable pozzolanic material. The macro vault shall be created to minimize interior voids or air pockets. The encapsulating material shall have long-term integrity such that potential leaching media within a hazardous waste cell would not cause the encapsulating material to deteriorate. Waste shall not protrude through the surface of the macro vault. A macroencapsulated waste shall have the macro material (concrete/pozzolanic material) present and apparent upon surficial visual inspection at the point of disposal. A minimum exterior coating thickness of one inch is required. Corrective action is required for any macro vault that is found to lack structural integrity prior to disposal in a lift. 7.4.2. Macroencapsulation with Inert Jacket The method utilized by the GMF shall require that a geomembrane liner be welded around the debris waste. This will typically be employed with pipe and large manufactured items around which a jacket can be custom-fitted. A minimum of 40 mil high density polyethylene geomembrane shall be used. In order to assure that the waste is consistent with the Clean Harbors profile, waste streams macroencapsulated utilizing this method shall be previously inspected by a clean harbors representative. The encapsulation can occur off-site or at the GMF, as long as the waste has been inspected for: 1. Verification with consistency with the waste profile description 2. That there are no free liquids in the waste 3. And that void space shall be minimized within the inert jacket. 4. As an alternative, the generator of the waste shall certify that the above criteria have been met. This data shall be incorporated into the operating record.
	Page 53	8.0 Recordkeeping for Waste Codes. "Most waste at GMF is contained and managed in discrete containers prior to disposal and much of it meets treatment standards prior to being received.
	Page 54	8.1.3 Stabilization Tanks. These tanks shall be used only for treating wastes. Each waste may carry different waste codes. Each time the tank is emptied (all material is removed that can be removed with the trackhoe or equivalent) all RCRA or State waste codes shall be considered to be removed.

		No waste code tracking shall be required unless more than one waste, with different waste codes, is being treated at the same time. If the facility accepts and treats TSCA/RCRA waste, the tanks in which treatment occurred shall be emptied and determined to meet the definition of empty for RCRA purposes and by triple rinsing with a suitable solvent for TSCA purposes….. 8.1.5. Waste Code Tracking/Removal Procedure for Cumulative Tanks. "…If batches with different waste codes are mixed, the LDR standards for all the waste codes in the batch shall be met prior to disposal.
	Page 55	9.0 Analysis of Treated Waste. A suitable laboratory shall perform the analysis of the treated wastes. The treated wastes shall be tested for all LDR constituents with numeric standards and UHCs as appropriate for the waste codes in the waste that did not meet treatment standards prior to treatment.
• Post treatment storage (put piles)	Page 55	10.0 Fate of Treated Wastes. Treated wastes can be temporarily (six months or less) "put" onto a liner (put pile) within a hazardous waste landfill cell or in a container while awaiting laboratory (verification) analysis. The liner shall be visible on all sides of the waste so as to prevent commingling with the waste in the landfill and other put piles. Such wastes shall be labeled with a tracking number and located in such a manner that allows complete retrieval of the waste should the waste analyses subsequently determine that the waste does not meet the treatment standard. Wastes making up a put pile shall be disposed within one year of receipt at GMF and no more than 250 put piles can be in existence at one time
	Quality Assurance Plan Appendix 1 of Attachment II WAP	4.1 Sampling Collection. The first step in any analysis is the collection of the sample. A wide range of techniques and sampling devices are utilized to sample waste materials in containers, tanks, and process streams. The sampling methodology is determined by the sampling strategy employed. Sampling may be representative, composite, grab, or surface area depending on the sample strategy. The methods and equipment used for sampling waste material vary with the form and consistency of the waste material, and by the type and purpose of the testing. The following sampling procedures may be utilized for the following types of materials. --Extremely viscous liquids…ASTM D140; SW 846 --Crushed or powdered material --soil or rock like material --soil-like material --Fly ash like material --Stratified liquids
	Approved Waste Code	Note that the Stabilization Tanks where wastes are treated include may organic wastes.

	List Appendix 2 of Attachment II WAP	
EPA Region 9		
Clean Harbors San Jose, LLC CAD05949310 Note: On page III-2 there is mention of the Facility Waste Analysis Plan (WAP) however it was not found in the document entitled, RCRA Part B Permit Application Permit Renewal, August 2012.		
	Part III Waste Characteristics III-1	Waste analysis parameters/rationale for parameters. Sampling is typically performed by the Facility to confirm waste characterization or for operational purposes.
	III-2	Once the waste shipment arrives at the facility, it is sampled and analyzed to verify that it matches the identity of the waste designated on the accompanying manifest or shipping paper. Because the generator's characterization provides the facility with information concerning the distribution and nature of the waste components within the waste material, and because the facility is verifying the previously submitted information rather than completely characterizing the waste, a streamlined sampling approach is appropriate (e.g., a vertical composite sample of a tank truck will be representative of its contents).
	III-3	Process in-line Sampling. The variability of the waste streams at any point in a treatment process is first determined from knowledge of the process producing the stream or from the results of a preliminary investigation of the waste stream. Sampling strategy is determined from the results of a preliminary investigation of the waste stream. Sampling frequency is based on the waste streams' variability. The sampling procedures consist of obtaining samples from appropriate in-line sampling points (e.g., taps or ports) in the process stream and compositing them for analysis. The sample size can be varied, depending o the flow rate of

		the stream.
	III-8	If the waste is subject to a LDR and the generator wants the waste to be treated by the facility, the generator is to supply the appropriate LDR notification information and any applicable data. The facility may perform the appropriate treatment studies and develop the data necessary (as needed) to demonstrate that the appropriate treatment standards can be met. --If the waste is subject to a LDR and the generator (or treater) has treated the waste, the generator (or the treater) supplies the appropriate LDR certification information and the analytical data to the facility. --If the waste is subject to a LDR and the generator has determined that the waste naturally meets the LDR, the generator supplies the certification information and the analytical data necessary to demonstrate compliance with LDR. If the generator has developed this certification based upon knowledge of the waste and does not supply analytical data, then the facility may develop the analytical data necessary to demonstrate compliance with the appropriate LDR. --Other supporting documentation such as MSDS', product ingredients, available analyses, etc.
	III-18	Land Disposal Restrictions. If the waste is subject to an LDR and the generator (or treater) has treated the waste, the generator (of the treater) supplies the appropriate LDR certification information and the analytical data to the Facility. If the waste is subject to an LDR and the generator has determined that the waste naturally meets the LDR, the generator supplies the certification information and the analytical data necessary to demonstrate compliance with the LDR. If the generator has developed this certification based upon knowledge the analytical data necessary to demonstrate compliance with the appropriate LDR.
Clean Harbors Westmorland, LLC, 5295 South Garvey Road, Westmorland, CA 92281 CAD000633164 WAP Version June 2014		
General Information	Revision 1 March 2006 Section 2.0 Pages 1-3	Clean Harbors Westmorland is a TSD facility, located in Imperial County, CA on 640 acres. (1) 2 landfills with, at a minimum a three foot thick compacted clay liner, two synthetic liners, and both primary and secondary leachate collection and removal systems. GW and vadose zone monitoring systems have been/will be installed around each landfill before operations.
	Section 2.0 Page 4	The stabilization treatment unit (STU) modifies the chemical and physical characteristics of the wastes to allow landfilling. The STU includes a truck wash station, bulk waste unloading bays, liquid waste receiving/treating tanks, sludge storage/mixing...the stabilization/solidification treatment to chemically remove free liquids and to reduce the leachability of ionic species.
	Section 3.0	The County's use permit allows for only 440,000 tons of waste per year (disposed)

	Page 2	
	Section 3.0 Page 4	Stabilization Treatment Unit (STU) and related above ground storage tanks and bulk waste unloading bays for hazardous waste treatment to meet the LDRs.
	Section 3.0 Page 4	The STU is designed to receive, store, process and transfer waste that cannot be disposed of directly in a landfill. The STU treatment process will modify the chemical and/or physical characteristics of the waste to allow subsequent placement in a landfill. The STU will include a truck wash station, bulk waste unloading bays, a facility for receiving containerized wastes, waste processing equipment, treatment waste handling equipment, and area to process packaged laboratory chemicals and future construction of a liquid waste receiving /treatment tanks. Phase I operations will undergo solidification, hydration, pozzolonic reaction to remove free liquid and to reduce the leachability of hazardous constituents. Tanks will be used to store various types of materials such as incoming waste receipts, various additive materials, and wash water.
• Post treatment storage	Section 3.0 Page 8	Stabilization Treatment Unit. Once treated, solid wastes will be placed in roll-off bins and placed in the treated waste area OR landfill. Once treatment is verified, the treated wastes will be moved to the landfill for disposal.
	Section 3.0 Page 11	Bench scale treatability testing is sometimes conducted to determine the required treatment based upon the contaminant to be treated and the desired degree of treatment. Bench-scale treatability tests may include pH adjustment, addition of treatment or stabilizing chemicals, blending for the chemical reaction, curing, or other appropriate procedures and processes. Bench scale testing may not be necessary depending on the characteristic or constituent requiring treatment and the facility's experience in treating the characteristics or constituent. The treated samples of profiled waste will be analyzed to determine whether chemical constituents or characteristics of concern can be treated to meet the appropriate LDR limits. If treatment achieves these limits, the waste may be accepted from the generator. The results of this testing will be recorded on the Bench-scale Treatability form.
	Section 3.0 Page 13	The waste profile analysis will be repeated at least annually.
LDR Certifications	Section 3.0 Page 23	The LDR certification and notification forms will be maintained and attached to the manifest and filed by the generator name and waste identification number.
• Single grab	Section 3.0 Page 20	Following treatment, a treatment verification analysis will be conducted to demonstrate that the treated material meets the LDR limits for constituents of concern identified in the profiling process. After a waste has been treated by the s/s process at the facility, one random grab samples will be taken from each batch of treated wastes. The samples will be collected using a clean metal trowel or shovel and will be placed in appropriate containers as specified by the type of analyses to be performed per SW-846. After a waste has been treated through the proposed wastewater treatment process, one

		random grab sample will be obtained from the treated liquid material. The sample will be collected using a clean coliwasa, tubing or weighted bottle and will be placed in containers that are appropriate for the type of analyses to be run.
• Post treatment storage	Section 3.0 Page 21	The treatment verification analysis will be performed as follows: (1) Where the analysis contained in the waste profile indicates that the untreated waste meets LDR but fails the paint filter test, the waste will be treated (e.g., solidified) and reanalyzed using the PFT to verify that no free liquids are present. (2) Where the waste profile analysis or data from the generator indicates that the untreated waste requires treatment, the treated waste sample will be analyzed for the constituent failing the LDR treatment standard according to the methods specified in 40 CFR 268 and/or 22CCR 66268. Stabilized and/or solidified treated waste material may be staged in the treated waste storage area until the TVA confirms that the treated meets the applicable LDRs. When the analysis shows that the waste has been treated to the applicable LDR, the waste will be transferred to the landfill for final disposal. The results of the TVA will be recorded and kept as a part of the operating record.
	Section 3.0 Page 21	If the TVA indicates that the treated waste did not meet the LDR standards, additional treatment will be required and the re-treated waste will be subject to a second TVA, If the second TVA indicates that the treated waste did not meet the treatment standard, the material may undergo additional treatment. If continued re-processing is not feasible, the waste will be manifested and shipped off-site for alternative treatment and/or disposal facility in accordance with all applicable regulations.
Chemical Waste Management, Kettleman Hills Facility (KHF) **Kings County** **35251 Old Skyline Road** **PO Box 471** **Kettleman City, CA 93239** **CAT000646117** **WAP #1: Revised: September 3, 1998; June 16, 2003.** **WAP#2: Revised: September 3, 1998, June 16, 2003, December 12, 2012, July 15, 2017, March 16, 2018.**		
	WAP#1, Page 12	LDR Notification/Certification Information and Data, in accordance with 40 CFR Part 268 and 22 CCR Chapter 18 (22CCR 66268).
• Other type of sampling frequency (Frequency varies based on	WAP#1, Page 5	The sampling frequency used to verify that processing units, such as stabilization, are continuing to meet treatment standards varies, depending on the type of waste (bulk vs drum), waste stream specific variability and background data. The sampling frequency will vary depending on the type of waste, waste stream variability and background data. This variability can be determined from a knowledge of the process producing the stream or from the results of previous waste stream analyses. The sampling procedures consist of obtaining

type of waste, variability and background data).	WAP#1 Page 22	samples from designated in-line sampling points in the process stream and, if appropriate, compositing them for analysis. Post-treatment analyses will confirm successful treatment and that the process effluent can be sent to the next step (disposal or further treatment) based on permit or process constraints. Treatment residuals resulting from on-site treatment of LDR waste, destined for land disposal, will be sampled and analyzed based on applicable RCRA code, code group, analytical parameter or profile designation to demonstrate the treatment process is effective and complies with applicable LDR performance treatment standards in accordance with 40 CFR 268 and 22 CCR Chapter 18. Restricted waste residues (treated/untreated) destined for off-site disposal including, but not limited to incineration, fuels, wastewater treatment, recycling, recovery, etc., will be analyzed and/or evaluated to properly identify regulated constituents in accordance with 40 CFR Part 268 and 22 CCR Chapter 18.
• Other type of testing frequency (First three, annually thereafter) • Every batch or load tested (if waste streams are combined for stabilization)	WAP #1. Page 18	In this process, certain LDR wastes are stabilized to meet the appropriate LDR treatment standard. The pretreatment analyses for LDR waste to be stabilized to meet a particular stabilization treatment standard consists of the mandatory analyses performed on the incoming shipment. In addition, a portion of the pre-acceptance sample may be stabilized and then analyzed using the appropriate methods to demonstrate that the LDR waste can be stabilized to meet the appropriate treatment standard and to establish the mix ratio of reagents(s) to waste that is used as a guideline. If the stabilization evaluation is not performed on a pretreatment sample, a previously developed and established mix ratio is identified for use. For LDR wastes, dilution alone is not used to achieve a treatment standard. After acceptance, the LDR waste shipment is sent to the stabilization unit for stabilization. The mix ratio previously established through the process above is used to stabilize each shipment of the LDR waste. A post-treatment analysis program is conducted to assure that the process continues to be effective in meeting the treatment standards, the post-treatment analysis program is a profile-specific program. Each individual profile is verified and tracked independently. Profiles are generator and waste stream specific. the only exception is when a generator creates a new profile for the same waste, with no changes to the waste characteristics (RCRA codes, UHCs, pH, and physical state). In this instance the post treatment history can transfer from the old profile to the new profile. Upon initial receipt of a waste stream, the first three shipments of the LDR waste will be stabilized, sampled, stored and analyzed to demonstrate the treatment efficiency of the mix ratio used for stabilization. All three shipments must be treated in the same manner, i.e., the same mix ratio used on all three loads, After three consecutive post treatment verification analyses of the stabilized LDR waste demonstrate the mix ratio is effective in meeting the treatment standards, the waste stream will be placed on an annual testing program. The program requires that one shipment of the LDR waste from the waste stream stabilized, sampled, stored, and analyzed annually to verify the treatment efficiency of the established mix ratio. For waste streams that are on the annual testing program, should a generator notify the facility that a process generating

		the waste stream has changed, and/or the contaminant levels of the waste stream have changed significantly, the waste stream will need to restart the treatment verification process. Three consecutive post-treatment verifications demonstrating the mix ratio is effective in meeting the treatment standards will be required, whether the mix ratio has changed or not. If for any reason, the new mix ratio is developed for a waste stream that had a previously approved mix ratio, the new mix ratio must restart the post treatment verification process and three consecutive post-treatment verifications must demonstrate the new mix ratio is effective in meeting the treatment standards before the waste stream can return to the annual testing program. The recipe (the mix ratio) developed as described above is followed whenever treating subsequent shipments of the same waste stream (as defined by a waste profile). A sample of each KHF stabilized waste stream is tested during the re-evaluation period to verify, by meeting all applicable LDR treatment standards, that the recipe used continues to be appropriate. Waste streams may be combined for stabilization purposes, in which case, recipe verification will be conducted on each combination of stabilized waste streams.
	WAP#1: Page 24	In this process, certain LDR wastes are stabilized to meet the appropriate LDR treatment standard. The pretreatment analyses for LDR wastes to be stabilized to meet a particular stabilization treatment standard consists of the mandatory analyses performed on the incoming shipment. In addition, a portion of the pre-acceptance sample may be stabilized and then analyzed using the appropriate methods to demonstrated that the LDR waste can be stabilized to meet the appropriate treatment standard and to establish the mix ratio of reagents to waste that is used as a guideline. If the stabilization evaluation is not performed on a pretreatment sample, a previously developed and established mix ratio is identified for use. After acceptance, the LDR waste shipment is sent to the stabilization unit for stabilization. The mix ratio previously established through the process above is used to stabilize each shipment of the LDR waste. A post-treatment analysis program is conducted to assure that the process continues to be effective in meeting the treatment standards. The recipe (the mix ratio) developed as described above is followed whenever treating subsequent shipments of the same waste stream (as defined by a waste profile). A sample of each KHF stabilized waste stream is tested during the re-evaluation period to verify, by meeting all applicable LDR treatment standards, that the recipe used continues to be appropriate. Waste streams may be combined, for stabilization purposes, in which case, recipe verification will be conducted on each combination of stabilized waste streams.
• Reagent	WAP#1: Page WAP-B-2.	Stabilization Evaluation. The waste to be stabilized is mixed with at least one combination of cement kiln dust and/or other suitable reagent(s). Heat change (as evidence of curing) which occurs is recorded as the waste/reagent(s) mixture is "setting". The occurrence of any violent reactions of reagent(s) to waste sample is noted.
	WAP#1 Page 25	In this process hazardous debris, as defined in 40 CFR 268.2 and 22 CCR 66268.2 is treated by one or more of the specified technologies identified in 40 CFR 268.45 and 40 CCR 66268.45. Pretreatment analysis consists of the visual inspection of the waste, conducted during the

		incoming shipment procedures, in order to confirm that the selected method of treatment is appropriate based on the components of the hazardous debris. In addition, supplemental analyses may be performed at the request of the facility management to further evaluate the waste for treatment. Post treatment analysis consists of a visual inspection of the treated hazardous debris performed as necessary to confirm that the hazardous debris treatment technology conducted has treated the waste to meet the designated performance and/or design and operating standards and any contaminant restrictions identified in 40 CFR 268.45 and 22 CCR 66268.45.
	WAP#2 Page 4	The sampling frequency used to verify that processing units (e.g., stabilization) are continuing to meet treatment standards, will vary depending upon the type of waste (bulk versus drum), waste stream variability and background data. This variability can be determined from knowledge of the process producing the stream or from the results of previous waste stream analyses. The sampling procedures consist of obtaining samples from designated in-line sampling points in the process stream and, if appropriate, compositing them for analysis. The proper and complete treatment of a particular waste depends on appropriate sampling and analysis during selected phases of the operation. Results of this analytical program serve to determine safety constraints, confirm treatment method selection, and identify the process parameters. The treatment sampling and analysis program may be divided into three segments, each with a specific purpose. Pretreatment analyses; In process analyses; and post treatment analyses which will confirm successful treatment and that the process effluent can be sent to the next step (disposal or further treatment) based on permit or process. Treatment residuals resulting from on-site treatment of LDR wastes, destined for land disposal, will be sampled and analyzed based on all applicable RCRA codes, UHCs, code group, analytical parameter or profile designation to demonstrate the treatment process is effective and complies with applicable LDR performance standards.
	WAP#2 Page 17	Stabilization is a process by which waste can be treated to remove free liquids, producing a mixture that has no free liquids and sufficient structural integrity for the landfill. In addition, stabilization can be used to treat (that is, reduce the immobility, immobilize, and/or reduce the toxicity of) certain inorganic components, including some LDR inorganic compounds. In this process, the wastes are mixed with a stabilizing agent (for example, lime, cement, flyash, clean soil, absorbing agents, etc.) and/or suitable reagents (for example ferrous sulfate, etc.) that cause a chemical reaction producing a treated mixture suitable for land disposal. The general approach is shown in Figure 6-4 is implemented for each batch treatment.
	WAP#2 Page 19	In the event a post-treatment verification sample fails to meet the treatment standards, the facility will evaluate the cause of the failure and determine whether a new mix ratio is required for the waste stream. Once a determination has been made, the waste stream will need to restart the post-treatment verification process and three consecutive post-treatment verification analyses demonstrating the mix ratio is effective in meeting the treatment standards are required, whether the mix ratio has changed or not.

Safety-Kleen Systems, Inc 2918 Worthen Avenue Los Angeles, CA 90039 (323)660-9562		
Clean Harbors Buttonwillow (Laidlaw Environmental) WAP 06/10/92		
	3-8	The facility is a hazardous waste treatment, storage, and disposal facility and, as such, will accept hazardous waste as defined in 22 CCR 66261. The facility will also accept special wastes and designated waste. Waste types received at the facility between 1983 and 1990 included wastes associated with the exploration, extraction, production, refinement, marketing and/or transportation of crude oil, natural gas, and/or petroleum derived fuels and lubricants.
	3-35	The treatment Verification Analysis determines whether waste streams have been treated to ensure acceptance at the next waste management steps.
• Mixing Method	3-38	Stabilization Treatment Unit. The STU is designed to receive, store, and process wastes that cannot be disposed of directly in a landfill. The STU treatment processes will modify the chemical and physical characteristics of the wastes to allow subsequent placement in a landfill. The STI will include a truck wash station, bulk waste unloading bays, a facility for receiving containerized wastes, waste processing equipment, treated waste handling equipment, an area to process packaged laboratory chemicals and future construction - Phase II liquid waste receiving/treating tanks. During Phase I operations, wastes will undergo hydration/pozzolanic reaction to chemically remove free liquids and to reduce the leachability of hazardous waste constituents. The Phase II wastewater treatment processes will include oil removal from liquids and sludges; neutralization of acidic or caustic wastes, and hydration/pozzolanic reaction to chemically remove free liquids and to reduce the leachability of hazardous waste constituents. <u>The process equipment will include a pug mill, auger shredder and a series of conveyors and hoppers to process the wastes. Tanks will be used to store various types of materials such as incoming waste receipts, various additive materials and waste water.</u>
	Page 3-41	Stabilization and Treatment - This process is fully described in Section 4.2 Stabilization Treatment unit (see above). Bulk land drum loads received at the facility may go directly to stabilization and treatment. Drums and PLCs which have been unpackaged and consolidated into bulk loads may for to the stabilization and treatment process. The purpose of this process is to ensure that all wastes going to the landfill meet all treatment requirements.
• Post treatment	Page 3-41	Container Storage Area. The on-site container storage areas will be used for storage of

storage		incoming wastes shipment, stormwater runoff….these areas will also provide a temporary holding area for off-specification treated wastes that has undergone onsite stabilization and treatment but based on testing will not have met requirements for landfill disposal. These wastes may be retreated in the stabilization and treatment processes in an attempt to meet treatment requirements. Alternatively, these wastes may be transported in bulk to an off-site TSDF.
	Page 3-42	Landfill. The wastes placed in landfills must be compatible with the synthetic liners and with the uppermost lift of previously landfilled waste. Treated waste undergoing final placement in a landfill will contain no free liquids, be non-ignitable and non-reactive, and not be restricted from land disposal as defined in 22 DDR 66268 and/or 40 CFR Part 268. Drums will be crushed or shredded prior to placement in the landfill. Solid and/or sharp objects will not be placed into within three feet (vertically) of the uppermost synthetic liner. Each load of treated waste will be placed into a documented temporary landfill location. Following verification that a load of treated wastes meets the appropriate treatment standards, the waste will either be moved to its final location in the landfill or the temporary location will become the wastes' final location in the landfill and be recorded as such.
	Page 3-43	Only process waste receipts amenable to stabilization and/or treatment as determined in bench-scale treatability testing will be accepted for stabilization/treatment. Extremely acidic solutions (pH<1), unless neutralized prior to receipt for stabilization and treatment will not be accepted due to material corrosion limits. Wastes containing free liquids with pH less than 3 will not be placed in concrete storage bins….
	Page 3-57	For wastes to be processed in the STU, the analytical data on the PE provided by the generator and on the PA provided by the facility laboratory will be compared with the list of chemical constituents or characteristics in 40 CFR Part 268 or 22 CCR 66268. If the chemical constituent or characteristics exceeds the limits described, the waste will be treatment prior to disposal in a landfill. To determine the required treatment, a bench-scale treatability tests may include pH adjustment, addition of treatment or stabilizing chemicals, blending for the chemical reaction, curing, or other appropriate procedures and processes. The treated sample of waste will be analyzed to determine whether chemical constituents are within the limits established. If treatment achieves these limits, the waste type will be accepted. The results of this testing will be recorded and will be part of the operating record. In addition, the WVI will reference that treatment is required.
	Page 3-68	For loads requiring treatment/stabilization, a decision will be made by the Waste Acceptance Manager and/or the Treatment manager to either treat a load individually or batch treat a combination of loads. Wastes will be managed so that only compatible wastes and those wastes requiring comparable levels of treatment will be processed together. The compatibility of combined loads will be verified through the WVA.
• Single grab sample (some	Page 3-69	Treatment Verification Analysis for STU. Following the treatment/stabilization of incoming wastes, a TVA will be conducted to demonstrate that the treated material meets the allowable limits for parameters identified in previous sections. The TVA will be conducted

are archived) • Other Type of testing Frequency (if wastes need to meet same treatment standards only 10% of treated loads tested.)		according to the frequency described in that section. Following treatment in a mixing device at the STU, the waste should be well mixed. One random grab sample will be taken from each container into which treated waste is discharged. The samples will be collected using a clean metal trowel and placed in appropriate containers for the type of analyses to be performed per EPA SW-846. Each sample container will be labeled with a batch treatment identification number, date, time and sampler's name. A sample will be collected from each load of treated wastes exiting the STU and will undergo the TVA unless otherwise specified. For wastes which are required to meet the same or similar treatment standards prior to land disposal, the TVA will be performed on samples collected from a minimum of 10% of the treated waste loads exiting the STU. The remaining sample residues or samples will be archived for a maximum of 30 days for possible future analysis, if necessary. Within this framework, TVA will be performed as follows: (1) physical description; (2) Paint filter test only if LDRs are met; and (3) TCLP or equivalent for regulated constituents.
	Page 3-74	Only after the TVA confirms that treatment performance standards are met will waste material undergo final placement in a landfill. If the TVA indicates the performance standards are not met for a load of treated wastes, the archived samples of all treated waste loads placed in the landfill between the load of concern and the previous load which passed TVA performance standards will also under the TVA. Based on the analysis of these archived samples, any load of treated wasted determined not meet the treatment performance standards may undergo additional stabilization/treatment, after removal from the landfill. If continued reprocessing is not feasible, the waste will be manifested and shipped off-site for alternative treatment or disposal according to all applicable regulations. The waste may be stored in the Container Storage Area until arrangement can be made for shipped to off-site facilities.
	Page 3-75	Treatment Verification Analysis for Bin-Top Solidification. The solidified waste is sampled after the addition of the solidification agent. A random grab sample will be taken from the waste load according to the guidelines in EPA SW-846 for collecting a representative sample.
	Exhibit 3.1-1	(Note: While no EPA hazardous waste codes are given, many wastes appear to be from the petroleum industry and could contained organic hazardous constituents however none are identified)
US Ecology Vernon **CAD097030993** **Evoqua Water Technologies LLC** **5375 South Boyle Avenue** **Los Angeles, California 90058** **February 2017**		
	1-1	Principal operations of the Facility include treatment of liquids, sludges, and solids. The

		wastes accepted for treatment go through a series of physical and/or chemical processes to destroy or remove the hazardous constituents and properties. The residues from this treatment are discharge to the Sanitation districts of Los Angeles County, recycled on-site through the treatment system, or shipped to an appropriate off-site facility. The Facility also receives and/or accepts broader categories of solid, sludge and liquid wastes for storage and transfer to appropriate off-site facilities. No waste is landfilled or incinerated at this facility.
	2-9	Post treatment generally refers to preparing solids and debris for final transfer to alternate permitted off-site disposal sites and can include solids solidification, stabilization, neutralization, and container cleaning and crushing. Consolidation and transfer refers to the storage and/or consolidation of wastes received and/or generated by the Facility that may be transferred to an off-site TSDF for treatment, recycling or disposal.
	2-13	Post Treatment The Facility may also perform a variety of post treatment activities including for example: Stabilization to prevent contaminants in the filter cake from leaching out of the cake; Solidification of filter cake; and consolidation of main treatment system process residual filter cake into bins.
	2-16	Waste management consists of the sampling and analysis necessary to properly treat and handle the wastes within the Facility, and discussed in Section 2.2.3 Waste disposal consists of those activities necessary to consolidate, characterize, and prepare hazardous waste for shipment and disposal to an approved third-party off-site hazardous waste disposal facility, and is discussed in Section 2.2.4
	2-19	The generator certified information on a WPD from is valid for a period of one year (12months) and is assigned a WPD ID number.
	2-27	Post-Acceptance Phase. Post-acceptance sampling and analysis is designed to assist the Facility in proper handling and managing the waste (treatment, consolidation and/or storage). Post acceptance sampling is done on an “as Needed” basis. The following section describe the post-acceptance sampling that may be performed. Consolidation of certain received wastes for storage, treatment or transfer require testing to ensure compatibility with other wastes already stored in tanks and containers and for general safe handling. Certain bulk or containerized wastes that may be added to the treatment processes require testing to ensure compatibility with wastes currently being treated and managed within the treatment tanks and process vessels.
	2-30	2.2.3.2. Operations Waste Management Sampling Waste management sampling and analysis is that analysis necessary to ensure that the waste treatment process is proceeding properly. Waste management sampling and type of analysis performed is dependent on the waste being processed and is conducted on an “as needed” basis (see Section 2.3.4). Wastes being treated by the treatment systems may have other wastes added to it at any time during the process operation. Depending on the nature and composition of wastes to be added, testing may be performed on wastes currently being

		treated to determine if accepted bulk wastes (or accepted wastes in storage awaiting treatment) can be added as waste and/or reagent directly to the treatment systems.
	2-30	2.2.4 Hazardous Waste Disposal Sampling. The Facility does not dispose of any hazardous waste at the Facility. Therefore, any waste that cannot be treated in the Facility's treatment system and discharged pursuant to the Facility's LACSD discharge permit is transported for off-site recycling, treatment, or disposal. Waste that is hazardous is profiled and coded prior to manifesting and transport. Therefore, the Facility conducts sampling and analysis sufficient to properly profile and manifest wastes generated on site. The degree of sampling and analysis to be performed will depend on the type of waste to be shipped off-site, compliance with LDR requirements, and any facility-specific requirements that may be imposed by the third party recycling, treatment, or disposal facility that will be receiving the waste.
	2-35	2.4.1 Sample Selection A sampling strategy is selected and prepared prior to actual sampling in order to organize and coordinate sampling activities, to maximize data accuracy and to minimize errors attributable to incorrectly chosen sampling procedures. Simple random sampling is utilized at the Facility for wastes arriving in containers. Random sampling is comprised of two methods, grab and composite. A grab sample is taken from a particular location at a specific point in time. A composite sample is a number of samples individually collected that are combined into a single sample for analysis.
DeMenno-Kerdoon Facility 2000 North Alameda Street Compton, CA 90222 CAT080013352 February 12, 2016		
	P-C-1	DeMenno-Kerdonn (DK) is an existing large off-site hazardous waste storage, treatment, and recycling facility for both RCRA regulated and California-only regulated (non-RCRA) hazardous wastes. DK is also a permitted centralized waste treatment facility regulated by the LA County Sanitation Districts. There are no on-site disposal activities at DK
	P-C-2	C.1.2.2 Wastewater Treatment Plant (WTP). The WTP treats oily wastes received from off-site generators and ww generated by on-site processes. On-site ww includes residuals from other treatment processes, condensate and boiler blowdown, cooling tower blowdown, truck washouts, and water removed from secondary containment structures. The facility uses some combination of gravity separation, treatment with demulsifiers, coagulants, and flocculants, dissolved air flotation, activated carbon adsorption, and/or a sour water stripper to meet the pretreatment discharge requirements of the LA Sanitation Districts.

	PC-17	C.4.3. Procedures to ensure compliance with LDR Requirements. The DK facility treats HW with the primary goal of recovering products for productive use and sale. Such products exit the hazardous waste system and therefore are not subject to LDRs. The DK facility also treats WW received from off-site sources and generated by on-site processes. The treated WW is discharge to the LA County Sanitation Districts under a permit issued by that agency pursuant to the CWA. As such, the discharged waster exits the hazardous waste regulatory system and therefore is not subject to LDR requirements. The facility generates and ships off-site hazardous wastes that result from the storage and treatment of off-site generated hazardous wastes. These are subject to LDRs. The facility does not treat restricted hazardous wastes to meet LDRs.
21st Century Environmental Management of Nevada, LLC PSC-Fernley Hazardous Waste Treatment and Storage Facility NVD980895338 WAP July 2012, Last Revised July 2017		
	Page C4	The PSC Fernley facility has developed this WAP as required by 40 CFR 264. A current copy of the WAP is maintained at the facility at all times. The PSC Fernley facility is a commercial hazardous waste storage and treatment facility. The facility can receive, store, and process wastes in either bulk loads or containers
	Page C7	Each waste stream that is received by the facility from an off-site generator shall undergo full characterization every other year.
	Page C16	A minimum of 10% of all Tier One and Tier Two containers of each regulated wastestream or profile received from off-site shall be randomly sampled. Tier Two regulated waste undergoing wastewater or inorganic storage tank consolidations are sampled at a 100% frequency prior to processing, but not necessarily during the acceptance process
	Page C18	Waste sent off-site for treatment and/or disposal are sampled as required by the destination facility, and as necessary to comply with the land disposal restrictions in 40 CFR Part 268.
	Page C19	Post Treatment Analysis. Treatment residues, filtercake from processing will be analyzed for total metals if the material is going to a smelter for additional metal content recovery, if required by the final destination. All treatment sludges are sent off-site to a Subtitle C landfill as hazardous waste with all inbound EPA waste numbers on the outbound manifest and LDR. The destination facility may conduct additional treatment (e.g., stabilization) to achieve LDR treatment standards.
	Page C23	Post Treatment Analysis. These analyses are conducted in conformance with the facility QA/QC Manual. Plant residuals and wastes generated onsite, filtercake and sludges will be analyzed under the following conditions. 1. Filtercake and sludges for Subtitle C treatment or landfill. No analysis required. Waste will be manifested with appropriate EPA hazardous waste numbers.

		2. Filtercake and sludges for metal recovery. Analysis will be conducted for total metals for the metal to be recovered (e.g., filtercake for copper recycling will be analyzed for total cooper only. This will occur for every load. Wastes that have not undergone any treatment or consolidation (Tier One) are not subject to post treatment analysis.
US Ecology-Nevada NVT 330010000 Waste Analysis Plan June 2016		
• Reagents • Other Type of Testing Frequency (Every batch unless same source routinely received then first batch thereafter annually). • Post treatment storage (in storage or disposal units)	Page 6	8.5.0 Waste Treatment Recipe Development. Typically, USEN requires a representative sample of wastes prior to on-site treatment to develop a treatment recipe. The waste sample is mixed in the lab with various reagents (typical reagents used on-site include fly ash, Portland cement, cement kiln dust, gypsum, water, clays, oxidizers, and carbon although other treatment reagents may be used including other wastes with characteristics appropriate for treatment.) to determine an acceptable mix design (recipe) by which the waste is ultimately treated to meet required standards. In some cases it may be appropriate to create mix designs after acceptance, but prior to treatment (e.g., when aggregated batches of mixed waste streams are treated together). Recipes may be adjusted after treatment if the recipe is unsuccessful or if more efficient treatment techniques are developed. Treatment effectiveness is verified prior to disposal except when wastes from the same source are routinely received. In that case, samples are collected from the first batch of treated wastes and at least once a year thereafter. Sampling frequency may be increased for waste streams that exhibit significant variable characteristics. Since wastes are treated based on a developed or verified recipe, they are assumed to meet the applicable treatment standards and may be staged in storage or disposal units pending confirmatory analyses. If post treatment analyses determine a treated batch does not meet applicable standards, the waste will be retrieved for re-treatment or off-site management. A treatment certification is issued to the generator for each batch successfully treated.
• Grab sampling	Page 7	8.6.2 Wastes Subject to LDRs. Initial waste shipments subject to the LDRs which require treatment must be accompanied by a one-time notification to USEN of the appropriate treatment standard or prohibition, including any applicable data or reference to such data or documentation which must be met in accordance with 40 CFR 268.7, except as otherwise allowed. When verifying that waste has been treated to meet LDR treatment stands, compliance with concentration level standards is based on grab sampling. When there is any uncertainty in

		achievement of treatment standards, the treated waste is re-sampled.
	Page 13	8.7.6 Managment of Residues. Waste residues and other miscellaneous equipment or debris originating from on-site management areas or activities may be characterized and managed as on-site generated wastes. If on-site generated waste is derived from a specific identifiable waste, it will be managed in accordance with the approved management conditions for that waste (e.g., a spill of F002 material is managed as F002). If precluded by permit, regulation, or operational conditions, the waste may be subject to alternative management, as appropriate. Stabilization residues and other treatment residues will carry the waste codes of the last waste stream in the unit and will be managed in the same manner. For example, sludges removed from a stabilization mix bin which last received k061 waste will carry the K061 code and must meet appropriate treatment standards for K061 before being land disposed on-site. Residues from truck washout and equipment washes conducted in the truck wash bay are managed as on-site generated waste. Residues of "RCRA Empty" containers are not subject to this WAP since they are not solid or hazardous waste.
	Page 17	8.8.2 Treatment and Transfer Operations. This section discusses analyses for hazardous waste treatment operations and off-site transfer of material for combustion. The treatment sampling and analysis program may be divided into three segments Pre-treatment analyses confirm the waste falls within the selected process design and allows adjustment of the process operational conditions during treatment In-process analyses to monitor treatment progress; and Post-=treatment analyses to confirm successful treatment and to determine characteristic of the process effluent. Process residues for LDR wastes will be analyzed and/or evaluated, as needed, against the appropriate treatment standards or prohibitions. Any residues or waste sent off-site for disposal or further management will have the appropriate notification and/or certification form in accordance with 40 CFR Part 268. 8.8.2.1 Bulking for treatment or Off-site Shipment 8.8.2.2 Specific Treatment Technologies Federal regulations define treatment technologies including Stabilization, Chemical Oxidation, Chemical Reduction, Deactivation, Macro/Micro Encapsulation, Neutralization, Adsorption, bioremediation, Evaporation, and Precipitation. Stabilization is defined by 40 CFR 268.42 as stabilization with the following reagents (or waste reagents) or combination of reagents 1. Portland cement or 2. Lime/pozzolans (e.g., fly ash and cement kiln dust). This definition does not preclude the addition of reagents (e.g., iron salts, silicates, and clays) designed to enhance the set/cure time and/or compressive strength, or to reduce leachability or hazardous constituents.

		A mix design is developed prior to the treatment of a waste stream. Stabilization may be performed within Mix bin Tanks or Containers. Treatment may occur with the Container Building, at the outdoor stabilization unit or within containers. Sampling, analysis verification of the treatment effectiveness and frequency of testing follows the guideline presented in this WAP. Macroencapsulation is a confining or immobilization technology used to treat all types of hazardous debris independent of the hazardous constituents involved (with the exception of cyanide-reactive debris, and of RCRA codes Doo1, D002 and D003). The macroencapsulation process encases the debris to provide a physical barrier that prevents/minimizes potential leaching of hazardous constituents from the debris. The encapsulating barrier does not need to chemically bond to either the debris or hazardous constituents. Macroencapsulation is defined in 40 CFR 268.42 Table 1 as the application of surface coating materials such as polymeric organics (e.g., resins, plastics) or use of a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media. Inert-non-waste material, or waste meeting appropriate LDRs, may be used for filler material. (NOTE: This is not from regulation) Macroencapsulation does not require specific testing for LDR constituent standards. This waste is treated at the facility to meet all requirements of the LDR treatment technology standard and is certified by USEN to meet these requirements prior to disposal. Macroencapsulation may be performed at the container building or within the landfill. (NOTE: Treatment in the landfill is prohibited under LDRs, waste must meet treatment standards prior to land disposal.) The performance standard for the macroencapsulation technology is described under 40 CFR part 268.45, table 1 entitled “Alternative Treatment Standards for Hazardous Debris. This standard states that “Encapsulating material must completely encapsulate debris and be resistant to degradation by the debris and its contaminants and materials into which it may come into contact after placement (leachate, other wastes, microbes).” Micro encapsulation does not require specific testing for LDR constituent standards. Following the treatment process, the micro-encapsulated debris is visually inspected. Microencapsulation may be conducted in tanks or containers. The performance standard for the microencapsulation technology is described under 40 CFR 268.45. This standard states that “leachability of contaminants must be reduced”.
	Page 21	8.8.2.2.5 Hazardous Debris Treatment. USEN manages RCRA hazardous debris according to the treatment standards specified in 40 CFR 268.45. As stated in 40 CFR 268.2

		"Debris means solid material exceeding a 60 mm particle size that is intended for disposal and that is; A manufactured object; or plant or animal matter or natural geologic material. However, the following materials are not debris. Any material for which a specific treatment standard is provided in Subpart D Part 268, namely lead acid batteries, cadmium batteries, and reactive lead solids; Process residuals such as smelter slag and residues from the treatment of waste, wastewater, sludges, or air emission residues and intact containers of hazardous waste that are not ruptured and that retain at least 75% of tier original volume. A mixture of debris that has not been treated to the standards provided by 268.45 and other material is subject to regulation as debris if the mixture is comprised primarily of debris, by volume, based on visual inspection." RCRA hazardous debris is debris that contains a hazardous waste specified in 40 CFR part 261. The land disposal restrictions (LDR) of Part 268 require that certain wastes meet treatment standards before land disposal. Treatment standards are either a concentration-based or technology based. A waste with a concentration-based standard may be treated to meet LDR using any effective treatment method (except impermissible dilution). A Technology-based standard required treatment by the specified technology. Appropriate technologies for treatment of hazardous waste are identified as "alternative treatment standards." I40 CFR Part 268.45 outlines alternative treatment standards for hazardous debris. If a waste stream meets the debris definition, it may be treated using a technology-based treatment standard and land disposed in a subtitle C landfill. Technology based treatment standards authorized for debris treatment include extraction, destruction, and immobilization technologies. USEN currently performs the following immobilization treatment for hazardous debris. Microencapsulation - As defined in 40 CFR 268.45, Table 1, microencapsulation is "Stabilization of the debris with the following reagents (or waste reagents) such that the leachability of the hazardous contaminants is reduced: (1) Portland cement or (2) lime/pozzolans (e.g., fly ash and cement kiln dust). Reagents (e.g., iron salts, silicates, and clays) may be added to enhance the set/cure time and/or compressive strength or to reduce the leachability of the hazardous constituents." Microencapsulation treatment is performed in the indoor or outdoor stabilization unit. Macroencapsulation - As defined in 40 CFR 268.45 is "application of surface coating materials such as polymeric organics (e.g., resins and plastics) or use of a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media."

		In some cases it is advantageous to macroencapsulate debris subject to this standard in the landfill. (NOTE: this practice is prohibited under LDRs). The debris is placed in a suitable final location within the landfill, and macroencapsulation is performed in place with the selected reagents or materials (e.g., HDPE, LDPE, Portland cement, etc). Hazardous debris that has been treated by immobilization technologies remains hazardous but meets the alternative treatment standards. Immobilized hazardous debris is disposed in the landfill.
	Page 22	8.8.3. Landfill Disposal. USEN's sampling and analyses program is an integral part of this phase of operation as the results serve to evaluate compliance with permit constraints and LDRs, and determine safety constraints. Wastes destined for direct landfill disposal generally require only pre-disposal analyses. Wastes to be landfilled are typically subject to the fingerprint analyses for pre-acceptance samples and incoming waste shipments.
EPA Region 10		
U.S. Ecology - Idaho Site B IDD073114654 WAP Effective Date: July 28, 2016		
	Page 5	The purpose of this WAP is to provide guidance on the necessary waste characterization, sampling methodologies, analytical techniques, and overall procedures which are untaken during hazardous waste management activities including treatment, storage and/or disposal. Treatment and disposal activities include but are not limited to stabilization, solidification, chemical oxidation, chemical reduction neutralization, deactivation, evaporation, macro/micro encapsulation, adsorption (clay, carbon, etc) and subsequent landfilling of hazardous and non-hazardous wastes. As a general rule, USEI uses the term stabilization in the more industry wide generic sense, which implies the treatment of a waste material to make it physically and chemically stable. In this sense, stabilization consists of those treatment processes (including but not limited to all the treatment types described above) which are used to meet applicable LDR treatment standards or other applicable standard(s). The term "stabilization" is defined by the EPA under 40 CFR 268.42 as "Stabilization with the following reagents (or waste reagents) or combination of reagent (1) Portland cement; or (2) lime/pozzolans (e.g., fly ash and cement kiln dust) - this does not preclude the addition or reagents (e.g.., iron salts, silicates, and clays) designed to enhance the set/cure time and/or

		compressive strength, or to overall reduce the leachability of the metal or organic. USEI uses the term stabilization in a more generic sense to mean the treatment of a waste material to make it physically and chemically stable. In this sense, it consists of those processes, which make the material conform to applicable LDR treatment standards or other applicable standards(s) (NOTE: 40 CFR 268.42 states, "or to reduce the leachability of the metal or inorganic." (NOT ORGANIC))
• Other (composite samples)	Page 13	C.4.3 Compositing Samples. Compositing of samples is conducted at the facility laboratory. Each composited sample is composed of equal portions, by weight, of each sample. The individual sample portions are combined and mixed until homogenous (i.e., the sample visually appears uniform in texture, particle size distribution, and color). The weight of sample portions utilized for the composited sample is determined with consideration of the sample size required by the analytical method to be performed. The appropriate sized sample, in accordance with the analytical procedures to be utilized, is then randomly removed from the homogeneous composited sample for analysis. Where the composited samples of separate batches of treated waste are to be further composited for additional testing, the composited sample from each batch is stored for inclusion in the final composited sample for additional testing. At the time of additional testing, each composited batch sample is particle size reduced and mixed until homogeneous, as necessary, in accordance with the analytical procedures to be utilized, the individual composited samples of each treated batch are then composted, as described above, to produce the final composited sample for additional testing.
	Page 30	C.7.1.1 Debris Receipt. For debris, a visual inspection will be utilized to determine if the waste meets the definition of debris. Debris refers to solid material exceeding 60 mm in particle size that is a manufactured object, plant or animal matter or natural geologic material…A mixture of debris that has not been treated to the standards provided by IDAPA 58.01.05.011 (4 CFR 268.45) and other material is subject to regulation as debris if the mixture is comprised primarily of debris by volume based on the visual inspection.
	Page 30	C.7.1.2 Bulk receipt. This section discusses the sampling method for campaign incoming shipments.
	Page 37	C.8.3 Treatment Technologies. USEI utilizes several different treatment technologies in order to meet the applicable LDR or other standard as applicable. USEI utilizes the term "stabilization" throughout this document in a generic sense to mean the treatment of a waste material to make it physically and chemically stable. In this sense, it consists of those processes which make the material pass applicable LDR standards or other applicable standards. In this process, waste is treated to meet LDRs (e.g., elimination of free liquids, chemical and/or physical stabilization to remove or immobilize hazardous constituents, micro-encapsulation, macro-encapsulation, etc.) or to meet other appropriate requirements. IDAPA 58.01.05.011 (40 CFR 268.42) provides specific definition for several potentially distinct treatment technologies including stabilization, chemical oxidation, chemical reduction,

• Other Type of Testing Frequency (as necessary)		deactivation, macro/micro encapsulation, neutralization adsorption, bio-remediation, evaporation, and precipitation. Although the above treatment technologies may be considered distinct processes, the stabilization process is defined in the more generic sense due to the overlap of the associated treatment technologies and methods. Pre-treatment analyses consist of tests necessary to ensure the wastes can be treated to meet the applicable treatment requirements. In-process analyses are generally not required. Post-treatment analyses are performed as necessary to ensure restricted wastes meet applicable treatment standards.
	Page 37	C.8.3.1. Stabilization is defined by the EPA under 40 CFR 268.42 as "Stabilization with the following reagents (or waste reagents) or combination of reagent (1) Portland cement; or (2) lime/pozzolans (e.g., fly ash and cement kiln dust) - this does not preclude the addition or reagents (e.g.., iron salts, silicates, and clays) designed to enhance the set/cure time and/or compressive strength, or to overall reduce the leachability of the metal or organic.(NOTE: the regulations say "metals or inorganic NOT organic). Stabilization is the treatment of appropriate waste streams by use of pozolonic materials or wastes with pozolonic properties to reduce the leachability of organic, inorganic, or metals of concern. Appropriate use of this treatment technology is determined during the approval process. A mix design is developed prior to the treatment of a waste stream. Stabilization may be performed within mix bin tanks, or containers. Treatment locations may be the stabilization portion of the containment building, the debris portion of the containment building or the stabilization facility. Treatment is performed to meet applicable LDR standards. Sampling, analysis verification of the treatment effectiveness and frequency of testing follows the guidelines presented in the WAP.
	Page 38	C.8.3.2 Chemical Oxidation. Chemical oxidation is a treatment process targeted primarily at organic constituents (e.g., toluene and benzene) but may be used for inorganic constituents as well (e.g., cyanides and heavy metals such as mercury).
	Page 38	C.8.3.5 Macro encapsulation. Macro-encapsulation is a confining or immobilization technology used to treat all types of hazardous debris independent of the hazardous constituent involved (with the exception of cyanide-reactive debris). The macro-encapsulation process encases the debris to provide a physical barrier that prevent/minimizes potential leaching of hazardous constituent from the debris. The encapsulation barrier does not need to chemically bond to either the debris or hazardous constituent. Macroencapsulation is defined in IDAPA 58.01.05.011 (40 CFR 268.42, table 1) as the application of surface coating material such as polymeric organics (e.g., resins, plastics) or use of a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media, inert non-waste material, or waste meeting appropriate LDRs, may be used for filler material. Macroencapsulation does not require specific testing for LDR constituent standards. This waste is treated at the facility to meet all requirements of the LDR treatment technology

		standard and is certified by USEI to meet these requirements prior to disposal. Macroencapsulation may be performed at the containment building, CMU's, CSP#4/5, Truck unloading aprons, and the RCRA/PCB building The performance standard for the macroencapsulation technology is described under IDAPA (40 CFR 268.45, Table 1). The standard states that "encapsulating material must completely encapsulate debris and be resistant to degradation by the debris and its contaminants and materials into which it may come into contact after placement (leachate, other wastes, microbes).
	Page 39	C.8.3.6 Microencapsulation. Microencapsulation is confining or immobilization technology that required the stabilization of the debris with the following types of reagents (or waste reagents) such that the leachability of the hazardous contaminants is reduced: (1) Portland cement; (2) lime/pozzolans (e.g., fly ash, and cement kiln test); (3) additional reagents (e.g., iron salts, silicates, carbon polymers or clays) as appropriate. Microencapsulation does not require specific testing for LDR constituent standards. Following treatment process, the microencapsulated debris is visually inspected. Microencapsulation may be conducted in tanks or containers.
	Page 41	Stabilization Units (e.g., mixing tanks and containers) Limits: (1) wastes in stabilization units are subject to the applicable control/management standards of 40 CFR Part 264 Subpart CC…; (2) No fine wastes may be processed in the stabilization facility or the debris portion of the containment building; (3) No hazardous wastes with a pH less than 2.0 unless treated or removed in the same day or placed in compatible container; (4) no flammable liquid wastes; (5) treatability to achieve chemical stabilization must be established. Also limits for macroencapsulation, and microencapsulation.
• Other Type of Testing Frequency (First two batches, and at least once a year thereafter)	Page 46	C.8.11. LDR and CAMU Verification. The treatment standards are verified prior to ultimate disposal per the requirements of this WAP. LDR or CAMU confirmatory testing is conducted on waste stabilized at the facility or the CAMU remediation site to verify applicable treatment standards, except alternate treatment standards (e.g., macro- and micro-encapsulation). Samples are collected from the first two batches of each hazardous waste stream treated at the facility, and at least once a year thereafter. In order to perform verification testing on batches of wastes exceeding 50 yd3 treated in MBT-3 or MBT-4 in the containment building - debris portion, samples will be collected from each truckload or treated waste removed from the tank(s) in accordance with the procedures described in Section C.4. Batches of treated wastes less than or equal to 50 yd3, will be sampled in the same manner as MBT-1 and MBT-2 in the containment building - stabilization portion. The sampling frequency may be increased on waste streams that exhibit significant variable characteristics, as determined necessary by the technical reviewers. Since treated wastes are treated based on an established recipe, they are assumed to meet the applicable treatment standards(s) and may be staged pending verification analyses, if applicable. (NOTE: More description of "staged" needed - where is the waste staged?)

		Additional samples may be collected as necessary while performing verification analyses. Resampling associated with interim processing piles is discussed in more detail in C.11.5.
• Mixing method	Page 48	C.9.1.3. Mixing bin Tanks (Stabilization Portion). The stabilization portion's stationary mixing bin tanks are internally lined with steel wear plates that do not act as the primary containment. The wear plates protect the primary containment structures during the mixing of wastes, which is performed with an excavator. Each mixing bin tank is provided with a primary barrier and a secondary system equipped with collection sumps. The concrete slab floor areas inside the containment building is provided with a primary barrier, also equipped with monitoring and collection sumps, that comply with the requirements of IDAPA. Secondary and primary volume calculations are provided in appendix D.2.7. Further detailed information concerning the containment building and the mix bin tanks is found in Section D.9. This system is designed to manage both solid and liquid type waste streams that require treatment prior to landfill disposal. (Note: There is also a Mixing Bin Tanks (debris Portion) section that is similar to the above.)
	Page 49	C.9.2 Stabilization Facility. Stabilization in the stabilization facility is conducted in mixing bins (i.e., containers). Further information is provided in Section D, Section D.9 and D.10. Empty mixing bins are loaded onto one of two parallel tracks located on the south Side of the stabilization facility. The mixing bins are then pulled towards the Access ramps where they are loaded with solid, sludge, and liquid wastes via elevated access ramps located on both sides of the stabilization facility. After waste has been loaded into the mixing bin, the bins continue northward towards the reagent silos where the appropriate amounts of treatment material are added. Reagents are added to the mixing bins via a series of bulk material handling systems or a front-end loader, dump truck, or other appropriate equipment. Water is added directly into the mix bin at the mixing areas. After the required reagents have been introduced to the mix bin(s), the bins are moved to the mixing area on the western portion of the facility. Excavators, located on mixing platforms above the mix bins thoroughly mix the contents of the bins. After the reagents have been thoroughly mixed, the mix bins are indexed to the sampling area where if appropriate, waste process control samples are collected and analyzed as discussed in Sections C.10, and C.11.4. The Mixing Bins can then be reprocessed, emptied into another container or pile for additional on and./or off-site treatment or disposal. Taken to an appropriate storage area, or taken to the landfill for disposal.
• Grab sampling	Page 55	C.11.4 Sampling of LDR Waste and CAMU Waste. When waste is treated on-site for the purpose of meeting LDR or CAMU treatment standards or, for LDR or CAMU-eligible waste confirmation testing, samples are taken on a grab sample basis. EPA has promulgated compliance of concentration-based treatment standards for all non-wastewaters based on grab samples as stated in IDAPAA (40 CFR part 268.40(b)). USEI follows this sampling methodology for waste treated on-site. Any grab sample must pass the treatment standards in order for compliance to be assured. When there is any uncertainty in achievement of treatment

		standards, the sample should be re-sampled and/or re-analyzed as necessary.
	Page 56	C.11.5.1 Re-sampling of Interim Loads. Wastes treated on or off-site prior to disposal that result in a failure of applicable standards (from an initial sample) may need re-sampling or verification analyses. If the re-sampling indicates the waste meets treatment standards the waste may be released for disposal. If- re-sampling indicates the material does not meet applicable treatment standards the waste will be re-directed for further treatment, as necessary.
	Attachment 25: Treatment Processes Description - Page 5	(NOTE: this section of the permit contains information on various treatment conducted at USEI. Because of its expansiveness, this document will be provided as an attachment to this document.)
Chemical Waste Management of the Northwest Arlington Facility, Gilliam County ORD 089 452 353 17629 Cedar Springs Lane Arlington, Oregon ORD089452353 Revision 9: July 2012		
	Page 1-1	Procedures delineated in this WAP are as follows:"…maintain safe and appropriate methods of treatment, storage, disposal or movement of wastes within the facility. Quality Assurance Control Policy:"…Followed by the facility laboratory to achieve high quality analytical results."
	Page 2-6 Note: These piles may be non-compliant with LDRs.	Bioremediated Wastes. Containers - contaminated wastes that have been bioremediated in treatment containers will be sampled to verify that the contaminants are below the regulatory levels specified in 40 CFR Part 268 prior to land disposal or beneficial use. Three point samples will be obtained from each container using the sampling equipment indicated in Table 2-1. Static Piles and Windrows - Attainment of bioremediation levels in large static piles or windrows will be confirmed by analysis of grab samples obtained from the remediated waste. A representative number of samples will be collected from randomly assigned locations and analyzed for regulated contaminants. A three-dimensional simple random sampling strategy will be used to determine the sample locations of the pile as outlined in USEPA *Test Methods for Evaluating Solid Wastes SW-846.* The pile will be divided into a three dimensional grid system, the grid sections assigned numbers, and the sampling points chosen using a random number generator or random number table. a sample will be taken for each 250 tons or part thereof. The interior of the pile will be samle with the assistance of a backhoe excavator to remove the overlying soil and allow access to the sampling grid in question.

	Page 2-7	2.2..5 ORU Waste Treatment Verification Sampling. Solid wastes resulting from treatment in the ORU will be sampled to verify that the contaminant levels remaining in the solids are below the regulatory levels for profiled waste constituents as specified in the LDRs in 40 CFR Part 268. Once all applicable LDRs are met, the waste will be land disposed. Liquids resulting from the ORU treatment that are destined for beneficial use (such as fuel blending) will be evaluated to make sure they meet standards for applicable beneficial use. Liquid wastes resulting from ORU treatment that are to be sent off-site for further waste treatment (such as incineration) will only be sampled if required by the downstream treatment facility. ORU waste sampling will be based on an individual profiled waste stream. The sampling scheme is based on an initial sampling period followed by less frequent sampling for the remainder of the waste and an anticipated production rate of 10 tons per hour (240 tons per day). The first 1000 tons under each waste profile will be sampled three times per day (at approximately eight hour intervals). The three samples will be combined and a composite sample (from the three samples) will be sent for lab analysis. Effectively, that should provide a composite daily sample per approximately 240 tons of waste. If all samples for the initial 1000 tons of treated waste under a profile pass the applicable LDRs, then sampling for the waste stream will change to one composite sample (from three grab samples taken at approximately equal weight intervals) per 1000 tons of waste. Once a sample fails, then the sampling scheme reverts to the original sampling rate of three samples per production day until 1000 tons passes without any failures whereupon the sampling will extend to one sample per 1000 tons. When a profiled waste stream resumes after treatment of a different waste stream or other interruption, the sampling scheme will resume under the frequency that it was being conducted prior to the interruption.
	Page 4-3	Alternative Treatment Standards. Hazardous debris waste streams subject to the alternate treatment standards will be evaluated to determine: the geometric shape of the debris; the hazardous constituents present on the debris; or whether the debris is contaminated on the outer surface, the internal surface, or both. Based on these criteria, CWMNW will determine the acceptability of the debris for macroencapsulation, microencapsulation, or both.
	Page 4-7	In addition, every two years, a waste profile re-evaluation is conducted. This re-evaluation process consists of a review of the paperwork to ascertain that the analytical data is accurate and current and that it is sufficient to properly manage the waste as intended. The generator may be asked to review the current waste profile in order to confirm the information. This process, along with a vigilant incoming load screening program, is sufficient to ensure that wastes continue to be properly managed at the facility.
	Page 4-8	A laboratory treatability study to confirm treatment rate and extent may also be performed as necessary. As CWMNW gains experience in the ORU treatment of the contaminated waste in

		question, consultation with the WMI technical staff will not be necessary if the type of contaminant(s) and concentration levels in the contaminated waste are similar to that historically treated at the ORU.
	Page 5-3	RCRA debris for alternative LDR treatment - for bulk and containerized debris wastes received for macroencapsulation, each bulk shipment and drum or container is visually inspected for debris size and content (material greater than 60 mm in diameter (2.3 inches) must exceed 50% for the load to be treated as debris). Incoming load inspectors additionally compare the load to the respective profile sheet to make sure that the waste matches its profile. The waste is additionally inspected when placed in the stabilization unit bins. The operator views the waste from an elevated position. Unusual or irregular items may be retrieved at this point. The waste is again inspected by the waste handler in charge of sealing the macro box when the macro box lid is fitted onto the macrobox. Waste that does not belong in the load can be retrieved before the box is sealed and placed in the landfill.
• Other type of Testing Frequency (First three loads sampled, quarterly thereafter)	Page 6-4	6.2.1.2 Stabilization of Land Disposal Restricted Waste. In this process certain wastes that are prohibited from land disposal unless treated are stabilized to meet the appropriate stabilization treatment standard. The pre-acceptance analysis for the waste to be stabilized to meet a particular stabilization treatment standard consists of the basic mandatory analysis performed on the incoming shipment sample. In addition, a portion of a pretreatment sample may be stabilized, and then analyzed to demonstrate that the waste can be stabilized to meet the appropriate treatment standard and/or to establish the mix ratio of reagent(s) to waste that will be used. If an evaluation is not performed on a pre-treatment sample, a previously developed and established mix ratio is identified for use. Post-treatment analysis is conducted as needed to assure that the stabilization treatment process continues to be effective in meeting the LDR treatment standards. This post-treatment analysis must be performed while the waste is in a storage or treatment unit. There shall be no interim storage in a landfill unit unless this Permit is modified to do so. The post-treatment analysis is conducted to assure that the process continues to be effective in meeting the LDR treatment standards for the constituents of concern. In order to demonstrate compliance with the LDR standards, a reagent to waste mix ratio (recipe) will be developed through use of a bench-scale LDR stabilization evaluation or a database of applicable recipes for target waste codes. The recipe developed for each profile will be used to treat all subsequent shipments of the profiled waste. Upon initial receipt of the waste stream, following stabilization treatment, the first three loads for each profile will be sampled and analyzed (by TCLP) to demonstrate the validity of the recipe. At this point, the profile may be moved to a quarterly testing frequency at the discretion of facility management.

		Results from the analyses that indicate that the LDR treatment standards are not being met must not be disposed of and must be returned for further treatment or storage awaiting further processing. Insufficiently treated hazardous wastes must not be stored for more than one year in accordance with 40 CFR 268.50© unless the storage is solely for the purpose of accumulation of such quantities of hazardous wastes as are necessary to facilitate proper recovery, treatment or disposal.
	Page 6-5	Stabilization of K088 Waste - Post Treatment Testing In this process, the K088 waste is treated in the stabilization unit tanks to meet the LDR treatment standards in 40 CFR part 268, subpart D. this treatment process is discussed in more detail in other part of the permit. The post-treatment sampling and analysis is conducted to assure that the process continues to be effective in meeting the LDR treatment standards. Following stabilization treatment, the K088 waste residue will be sampled and analyzed for the constituents the waste is treated for as determined during the pre-acceptance step. Such post-treatment testing of the K088 waste residue will be performed at least once every month that the facility is treating K088 waste to demonstrate the treatment technology and process have been operated and maintained so as to comply with the performance levels specified in 40 CFR part 268, subpart D.
	Page 6-6	Immobilization. Immobilization is the process by which all debris contaminated with hazardous materials, without contaminant restriction, can be treated to substantially reduce the potential of contaminants from leaching from the debris. Two of these procedures (macroencapsulation and microencapsulation) can be performed using existing CWMNW stabilization facilities. Macroencapsulation is the treatment technology that encases debris to provide a physical barrier that reduces the potential of contaminants from leaching from the debris. Debris is placed into a macroencapsulation device and an acceptable material is placed around the debris to fill any void spaces. The macroencapsulation device is then sealed and placed in a hazardous waste landfill. Microencapuslation is similar to the current stabilization operations in use at CWMNW. The treatment technology involves the treatment of the debris with reagent(s) material such that the “leachabiity of the hazardous constituents is reduced”. With the subsequent disposal in a hazardous waste landfill.
	B-1	Appendix B Land Disposal Restriction Sampling The procedures described herein represent the sampling and analytical procedures established for use at the facility for the treatment, storage and disposal of Land Disposal Restricted hazardous waste, see 40 CFR Part 268. The Land Disposal Restrictions, 40 CFR 268, have specified the use of “grab” sampling for most of the compliance demonstrations to the LDR BDAT treatment standards. A grab sample is a

		single sample or measurement taken at a specific time or over as short a period as feasible.
• Other (Grab sample or grab sampling)	Appendix D	Statistical Analysis of Verification Samples of Land Disposal Restricted Wastes. CWMNW will take a grab sample, or grab samples of each batch of hazardous waste treated for land disposal restricted treatment levels. Results from the sampling and analysis will be evaluated in accordance with this appendix and guidance found in Guidance on Demonstrating Compliance with the LDR alternative Soil Treatment Standards Final Guidance [EPA530-R-02-003 July 2002. CWMNW may, and will usually, take one sample per treated batch. Results of the one sample will initially be evaluated in accordance with Data Evaluation Method No. 1 listed in table 1 below. Data Evaluation Method: Non-statistical Method Appropriate Conditions for Use: 1. Useful when sampling and measurement error can be minimized, and the volume of soil is relatively small; 2. Useful when only a rough estimate of the constituent concentration is required. Advantages: Simple, easy to use and understand, low-cost. Limitations: Only provides a "point estimate" of the constituent concentration; does not provide information about variability; and does not quantify the uncertainty associated with the estimate. Data Evaluation Method No 1 is simply taking the results of the sampling and analysis and comparing them to the LDR treatment levels. However, if the results are above the LDR treatment levels, then either the waste will be further treated and evaluated, or more samples will (be) retrieved and tested. (No. If a grab sample exceeds the treatment standard the waste must be retreated or let to sit until it cures - you don't get to pick another sampling method.) Results from the additional samples must be evaluated using the appropriate statistical Data Evaluation Method listed in Table 1 below on the next page. w
	18	6.2 Specific Solid Waste Treatment 6.2.1 Stabilization. Stabilization is a process by which waste can be treated to remove free liquids, producing a mixture that passes the paint filter test. In this process, wastes are batch mixed with a suitable stabilizing agent (e.g., lime cement, kiln dust, fly ash, ground blast furnace slag, Portland cement-based reagents, dirt, etc.). 6.2.1.1 Stabilization of Wastes Containing Free Liquids. In this process, wastes that are not land disposal restricted are treated solely to stabilize free liquids. Pre-treatment analyses for these wastes consist of the basic inspection performed on the incoming shipments. In addition, a stabilization evaluation may be performed on a pre-treatment sample, known in CWMNW operations as a "sale sample" to ensure the waste's amenability to stabilization and to determine a mix ratio to be used as a guideline when the shipment of that waste material is

		to undergo stabilization. If an evaluation is not performed on a pre-treatment sample, a previously developed and established mix ratio is identified for use. After a shipment has been accepted, it will be sent to the stabilization treatment unit for stabilization using the optimum ratio previously identified. Post-treatment analyses consist of the paint filter test. In addition, supplemental analyses may be requested by facility management to further evaluate the suitability of the stabilized waste for landfill disposal. There are no in-process analyses.
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